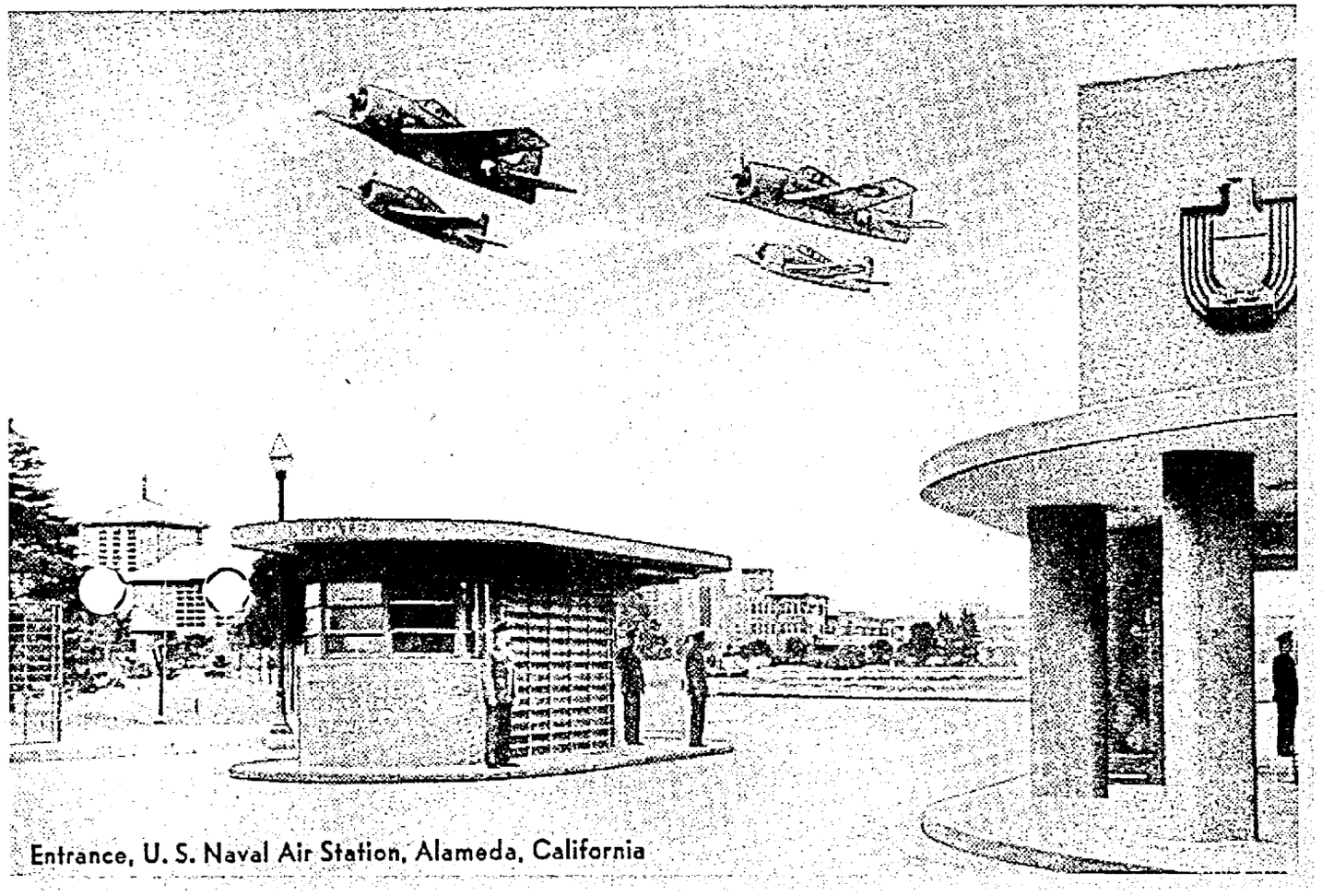
Contract Number N62470-02-D-3260
DCN: SHAW_3260_FZN0_0010
Contract Task Order FZN0

Shaw®



Entrance, U. S. Naval Air Station, Alameda, California

December 28, 2007

Installation Restoration Site 4, Plume 4-2
DNAPL Removal Action
Alameda Point, Alameda, California

Removal Action Completion Report

REMOVAL ACTION COMPLETION REPORT
Installation Restoration Site 4, Plume 4-2
DNAPL Removal Action
Alameda Point
Alameda, California

Environmental Remedial Action
Contract Number N62470-02-D-3260
Contract Task Order FZN0

Document Control Number SHAW_3260_FZN0_0010
December 28, 2007

Prepared for:

U.S. Department of the Navy
Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, California 92108-4310

Prepared by:

Shaw® Shaw Environmental, Inc.

Shaw Environmental, Inc.
4005 Port Chicago Highway
Concord, California 94520-1120

REMOVAL ACTION COMPLETION REPORT
Installation Restoration Site 4, Plume 4-2
DNAPL Removal Action
Alameda Point
Alameda, California

Environmental Remedial Action
Contract Number N62470-02-D-3260
Contract Task Order FZN0

Document Control Number SHAW_3260_FZN0_0010_0
December 28, 2007

Prepared by: _____ Date: December 28, 2007
Charles K. So, PE
Sr. Project Engineer

Approved by: _____ Date: December 28, 2007
David Cacciatore, Ph.D., PE
Project Manager

Table of Contents

List of Figures ii
List of Tables ii
List of Appendices iii
Acronyms and Abbreviations iv

Executive Summary ES-1
1.0 Introduction 1-1
1.1 Site Description 1-1
1.2 Geology and Hydrogeology 1-2
1.3 Project Background 1-3
2.0 Removal Action Description 2-1
2.1 Extent of Removal Action Area 2-1
2.2 Removal Action Objective 2-1
2.3 Treatment Approach and System Layout 2-1
3.0 Implementation of Removal Activities 3-1
3.1 Site Preparation 3-1
3.2 Treatment System Installation 3-2
3.2.1 Electrodes 3-2
3.2.2 Vapor Piezometers and Temperature Monitoring Points 3-2
3.2.3 Groundwater Monitoring Wells 3-3
3.2.4 Hot Vapor Conveyance Piping 3-3
3.2.5 Vapor Extraction and Treatment Train 3-3
3.2.6 Liquid Handling and Treatment Train 3-4
3.2.7 Power Supply and Connection 3-4
3.2.8 Pre-Operational System Inspections and Testing 3-5
3.3 Construction and Investigation-Derived Waste Handling 3-5
3.4 Additional System Design Investigation 3-6
3.5 Baseline and Progress Performance Sampling 3-7
3.6 Discharge and Emissions Monitoring 3-8
3.7 System Optimization 3-9
3.8 Termination of Treatment 3-9
3.9 Post-Treatment Sampling 3-10
4.0 Removal Action Effectiveness Assessment 4-1
4.1 Effects on Screening Analyte Concentrations and Mass Removal 4-1
4.1.1 Changes in Screening Analyte Concentrations 4-1
4.1.2 Effect on Metals During Treatment 4-2
4.1.2.1 Effects on Chromium 4-3
4.1.2.2 Effects on Arsenic and Barium 4-3
4.1.3 Mass Removal Estimate 4-4
4.1.3.1 Volatilization 4-5
4.1.3.2 Groundwater Recovery 4-6
4.1.3.3 VOC Mass Removal via Other Pathways 4-6
4.2 Treatment Cost 4-7

Table of Contents (continued)

5.0 Post-Removal Action Conditions 5-1
6.0 References 6-1

List of Figures

Figure 1 Site Location Map
Figure 2 Plume 4-2 (Building 360) Site Layout
Figure 3 Plume 4-2 (Building 360) Removal Action Area
Figure 4 Plume 4-2 Treatment System Grid and Equipment Layout
Figure 5 Hexavalent Chromium in Soil, 5 feet bgs
Figure 6 Total Chromium in Soil, 5 feet bgs
Figure 7 Chromium Isoconcentrations in Groundwater
Figure 8 Plume 4-2 Baseline and Progress Treatment Sampling Results
Figure 9 Well SA Concentration Changes from Baseline through Treatment
Figure 10 Plume 4-2 Chromium Concentration Changes in Groundwater During and After In-Situ Treatment
Figure 11 Cumulative VOC Mass Recovery and Temperature Plots Versus Hours of Operation During In-Situ Groundwater Treatment
Figure 12 Plume 4-2 Post-Removal Action SA Concentrations in Groundwater

List of Tables

Table 1 Summary of Additional System Design Investigation Soil Sample Results
Table 2 Summary of Additional System Design Investigation Groundwater Sample Results
Table 3 Summary of Groundwater SA Concentrations from Baseline through Post-Treatment
Table 4 Groundwater VOC Concentration Comparison between Baseline and Last Progress Sampling
Table 5 Groundwater Chlorinated VOC Concentration Comparison between May/July and September 2007
Table 6 DO and ORP Data Comparison between Baseline and Post-Treatment
Table 7 Summary of Additional System Design Investigation Groundwater Sample Results

List of Appendices

Appendix A	TRS Process Equipment Schematic, Construction Drawings and Summary Details for Electrodes, Temperature Monitoring Points, Vapor Piezometers
Appendix B	Building Floor Survey for Utility Clearance
Appendix C	Monitoring Well Construction As-Builts
Appendix D	System Installation Test Report
Appendix E	Waste Manifests (on CD)
Appendix F	Laboratory Analytical Data Packages for Treatment Impact Assessment Soil and Groundwater Samples (on CD)
Appendix G	Laboratory analytical data packages for Groundwater Baseline, Progress, and Rebound Samples (on CD)
Appendix H	Laboratory analytical data packages for System Compliance Monitoring Samples (on CD)
Appendix I	Statistical Analyses of September Rebound Groundwater Sampling Data (on CD)

Acronyms and Abbreviations

%	percent
µg/L	micrograms per liter
BAAQMD	Bay Area Air Quality Management District
bgs	below ground surface
Cr^{6+}	hexavalent chromium
DCE	dichloroethene
DDI	design data investigation
DNAPL	dense non-aqueous phase liquid
DO	dissolved oxygen
EBMUD	East Bay Municipal Utility District
EE/CA	Engineering Evaluation/Cost Analysis
FWBZ	first water-bearing zone
GAC	granular activated carbon
IR	Installation Restoration
kW	kilowatt
mg/L	milligrams per liter
mL	milliliter
Navy	U.S. Department of the Navy
°C	degrees Celsius
ORP	oxidation-reduction potential
PCE	perchlorethene
PCU	power control unit
PID	photoionization detector
POTW	publicly-owned treatment works
SA	screening analyte
sf	square feet (foot)
SVE	soil vapor extraction
TMP	temperature monitoring points
TRS	Thermal Remediation Services
TSD	treatment, storage, and disposal
TtEMI	Tetra Tech EM, Inc.
VOC	volatile organic compound
VP	vapor piezometer

Executive Summary

A removal action was conducted between May 2006 and July 2007 to address the dense non-aqueous phase liquid (DNAPL) in the soil and groundwater at Installation Restoration Site 4, Plume 4-2, within Alameda Point, Alameda, California. The removal action was implemented by Shaw Environmental, Inc. (herein referred to as Shaw), under the Environmental Remedial Action Contract with the U.S. Department of Navy (Navy), Base Realignment and Closure, and followed the conclusions of the Engineering Evaluation/Cost Analysis (EE/CA) completed in 2001. The main objective of the removal action was to reduce the total concentrations of the chlorinated volatile organic compounds (VOC) in the groundwater to below 10,000 micrograms per liter (µg/L), to the extent technically and economically practicable.

Results of historical investigations at Plume 4-2 suggested the potential presence of DNAPL in the soil and groundwater due to the detection of chlorinated VOCs at levels above 10,000 µg/L. The chlorinated VOCs of concern were 1,1-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethane, cis-1,2-dichloroethene, trans-1,2-dichloroethene, tetrachloroethene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene, and vinyl chloride. For the purpose of this removal action, these VOCs were also referred to as the screening analytes (SA). The supplemental design data investigation conducted between 2001 and 2002 at the site indicated that part of the groundwater plume was beneath the painting room and the plating shop of Building 360, a former aircraft maintenance facility where solvents and miscellaneous chemicals had been used, stored, and generated as waste. The estimated areal extent of the treatment plume was 34,400 square feet, and the maximum treatment depth was approximately 40 feet below ground surface (bgs).

The EE/CA specified a removal action involving use of in-situ electric resistance heating to remove the VOC mass in the subsurface. Thermal Remediation Services (TRS), a technology vendor subcontracted by Shaw, designed, installed, and operated the in-situ treatment system at Plume 4-2. The treatment system consisted of above-ground and below-grade process components, including 91 electrodes with integral vapor recovery wells, 14 temperature monitoring points co-located with vapor piezometers, a 2000-kilowatt power supply and control unit, and a fleet of vapor and liquid handling and treatment equipment. System installation, begun in late May 2006, was completed in October 2006, followed by system startup testing and routine operation. Treatment operation proceeded until early July 2007 when the system was shut down at the request of Navy.

During system installation, liquid containing elevated levels of chromium and other metals was encountered in two floor structures (also referred to as vats or trenches) inside the former plating

shop of Building 360. The liquid, present at several electrode installation locations, was pumped out for offsite disposal. Due to the unexpected presence of the chromium-laden liquid within the DNAPL treatment area, additional system design investigation to assess the effect from in-situ electrical resistance heating treatment on the chromium, in particular hexavalent chromium, was initiated.

The investigation involved installing two additional groundwater monitoring wells and collecting soil and groundwater samples in and around the plating shop for metals and other analyses before treatment began. Results of soil and groundwater sampling indicated that the source of chromium and hexavalent chromium was mostly confined within the plating shop. As such, additional groundwater samples were taken during and after treatment to monitor for changes in the metal concentrations that could be attributed to the result of the in-situ treatment by electrical resistance heating.

In addition to baseline sampling, treatment progress sampling was conducted periodically at the groundwater monitoring wells, with select well sampling performed the week following the shutdown of the system. In September 2007, one round of groundwater well sampling was conducted to determine the post-treatment concentrations of the chlorinated VOCs.

A total of 5,391,216 kilowatt-hours of energy was input to the ground within the treatment area upon shutdown of the system in July. Based on the results of the post-treatment sampling in September, all except one of the 19 monitoring wells showed SA concentrations below 10,000 µg/L. Excluding the one well above 10,000 µg/L, the reduction of SA concentrations between baseline and post-treatment ranged from about 39% to almost 100%, with a median value of 99.5%. The low percent reduction occurred in the west end of the treatment plume at a monitoring well screened between 32 and 37 feet bgs outside Building 360. The yield of a SA concentration of nearly 7,600 µg/L at that well was the cause of the relatively small reduction in that location. The source of the elevated SA concentration is not readily known. Based on the difference in the SA concentrations between baseline and post-treatment, the amount of chlorinated VOCs removed from the plume was estimated at more than 2,000 pounds. Approximately 200 pounds of the VOCs were recovered in the vapor recovery system installed and operated by TRS.

The one well with a post-treatment concentration of 12,000 µg/L measured in September 2007 is located inside Building 360, near the southeastern corner of the treatment plume and screened between 26 and 31 feet bgs. Sampling results collected from the baseline through the progress monitoring events during treatment did not show a concentration above 2,500 µg/L. Groundwater temperature at that depth had maintained consistently above 100°C for the latter five months of the treatment period. All of the other well sampling locations that achieved and sustained this elevated temperature yielded total SA concentrations far below 10,000 µg/L. The

well was sampled again for SA in October 2007, along with several other wells selected for sampling for metals analysis following in-situ heat treatment of the groundwater. The SA concentration was reported at 4,700 µg/L, still above the baseline concentration of 2,500 µg/L but well below the removal action goal of 10,000 µg/L.

Reduction of total and hexavalent chromium concentrations in the groundwater during treatment was noted in several monitoring wells within and outside the plating shop. Although the chromium concentrations showed decreases, arsenic and barium concentrations in some wells showed increases within the first few months of the treatment period. Concentrations of these two metal species remain elevated during the post-treatment sampling conducted in October 2007. However, such increases are expected to be temporal due to the presence of a reducing condition of the groundwater as a result of the in-situ thermal treatment. When the groundwater returns to the anoxic condition, the concentrations of the two metal species should gradually decrease to pre-treatment levels.

In conclusion, the removal action objective at Plume 4-2 was achieved. After eight months of continuous heating, the total SA concentration in the groundwater in the first water bearing zone was reduced to below 10,000 µg/L, with a mean concentration of approximately 1,600 µg/L. The bulk of the VOC mass was removed to the extent technically and economically practicable. There appears to be no mobilization of chromium and hexavalent chromium during and following treatment of the soil and groundwater.

1.0 Introduction

This Removal Action Completion Report, prepared by Shaw Environmental, Inc. (herein referred to as Shaw), summarizes the removal action conducted at Plume 4-2 (Building 360) of the Installation Restoration (IR) Site 4. IR Site 4 is located within the former Alameda Naval Air Station (currently known as Alameda Point) in California. Removal activities were executed for the U.S. Department of the Navy (Navy), Base Realignment and Closure, under the Environmental Remedial Action Contract N62474-98-D-2076, Contract Task Order 0133 and Modification Number 1. This report addresses the following main topics:

- Site description and project background
- Removal action objectives and approach
- Field implementation of the removal activities
- Removal action effectiveness assessment
- Post-removal action site conditions and recommendations

Supporting field records and analytical reports are included in the accompanying appendices.

1.1 Site Description

Plume 4-2 resides in the western portion of IR Site 4 and encompasses an area of approximately 34,400 square feet (sf) on the west to southwest end of Building 360. Figure 1, "Site Location Map," shows the locations of both IR Site 4 and Plume 4-2. The building, currently unoccupied, housed specialized production shops for repair and testing of jet-turbine and piston engines. These included a paint shop, a parts-cleaning shop, a plating shop, and machine shops. Industrial wastewater generated in Building 360 was treated at the wastewater treatment facility formerly located north of Building 163, which is approximately 50 feet west of Building 360, as shown in Figure 2, "Plume 4-2 (Building 360) Site Layout." Aircraft engine repair operations began at the site in 1954 (*RI/FS Work Plan, NAS Alameda, Alameda, California* [Canonie Environmental Services, 1990]). Plating operations discontinued and the plating shop was dismantled and removed in 1991. The machine shops, stripping and painting shops, and parts-assembly areas within Building 360 were active until 1996.

The former plating shop operations included paint stripping by blasting; chrome, silver, and nickel stripping; etching; and chrome, silver, nickel, and copper plating. The cleaning and blasting processes used baths of phenol-based cleaners, alkaline-type cleaners, rust removers, descaling compounds, and caustics. Chemical mixtures used in the cleaning process historically included a mixture containing 55 percent (%) tetrachloroethylene also known as perchloroethene (PCE). Several other mixtures containing dichlorobenzene, methylene chloride, toluene, and 30 to 70% solutions of sodium hydroxide were also used. Leaks of these chemicals were

believed to have contributed to the subsurface contamination found across the IR Site 4 area based on historical investigation findings (IT Corporation, 2002a).

Plume 4-2 was identified from a focused groundwater investigation previously conducted at IR Site 4 (Tetra Tech EM, Inc. [TtEMI] and Einarson, Fowler, and Watson, 1998). The groundwater plume was located beneath the former painting and plating shops on the west side of Building 360 (see Figure 2). Based on the detected groundwater concentration of 1,1-dichloroethene (DCE), the investigation results suggested a potential presence of dense non-aqueous phase liquid (DNAPL) contamination at the site.

1.2 Geology and Hydrogeology

Stratigraphy beneath IR Site 4 consists of four geologic units: the Lower San Antonio Formation, the Upper San Antonio Unit, the Merritt Sand Formation, and artificial fill (*Draft CLEAN II-Operable Unit-2 Remedial Investigation Report* [TtEMI, 1999]). The Lower San Antonio Formation, also called the Yerba Buena Mud, extends from 90 feet to between 150 and 175 feet below ground surface (bgs) and is composed of predominantly clay. Above the Lower San Antonio Unit is the Upper San Antonio Formation, which is composed of dark green-gray sand with sandy clay and silty clay. This formation extends from 70 to 90 feet bgs. Overlying the San Antonio Formation is the Merritt Sand Formation and it extends from roughly 10 to 70 feet bgs. It is composed of an orange-brown, fine-grained, silty sand and a fine-grained clayey sand. The top of the Merritt Sand is a dense, well-consolidated clayey sand between 1 and 5 feet thick and has a low hydraulic conductivity. Additionally, a zone divides the Merritt Sand into an upper eolian (i.e., dune sand) and a lower alluvial section. The eolian section of the Merritt Sand represents sediment deposition by airborne processes, and the alluvial section of the Merritt Sand represents sediment deposition by fluvial or water processes. The contact zone between the eolian sand and alluvial sand sections ranges from 5 to 15 feet thick, consisting of a dense to well-consolidated clayey sand. This clayey sand has a low hydraulic conductivity.

Overlying the Merritt Sand Formation is the artificial fill that extends from the surface down to roughly 10 feet bgs. The artificial fill consists of a light to dark brown, fine-grained, silty sand with trace amounts of gravel and brick fragments. The fill is composed of dredge spoils from the San Francisco Bay and the Oakland Inner Harbor.

Groundwater at IR Site 4 is encountered between 2 and 8 feet bgs within the artificial fill, with the average depth around 5 to 7 feet bgs at Plume 4-2. Unlike areas to the west, there is no intervening layer of Bay Sediment between the artificial fill and Merritt Sand beneath the site; therefore, the first water-bearing zone (FWBZ) present elsewhere in Alameda Point behaves as a single hydrogeologic unit at the site. The water-bearing zone is composed of artificial fill, Merritt Sand, and Upper San Antonio Unit. Beneath this interval, the Lower San Antonio

Formation (Yerba Buena Mud) forms a regionally continuous aquitard that inhibits water migration from the water-bearing zone to underlying formations.

The groundwater flow directions are affected by local recharge from precipitation, seasonal variation in groundwater elevations, and tidal influences. For Alameda Point, the groundwater has been found to generally flow from the east and northeast inland areas to the west and southwest. Within IR Site 4 and Plume 4-2, groundwater is affected locally by industrial building storm drains and underground utility trenches. Water levels in the surrounding area of industrial buildings suggest localized groundwater mounds and sinks. Based on a tidal study conducted in nearby wells, there is no tidal fluctuation expected at the site (*Tidal Influence Study Letter Report* [PRC Environmental Management, Inc., 1997]). Total dissolved solids concentration in the shallow groundwater has been measured at approximately 5,000 milligram per liter (mg/L) (*Determination of the Beneficial Uses of Groundwater at Alameda Point, Alameda, California* [TtEMI, 2000]).

1.3 Project Background

Because of the previous investigation findings, a removal action to address the potential DNAPL was initiated for Plume 4-2 (TtEMI, 2001). Between 2001 and 2002, a design data investigation (DDI) was conducted to further determine the contaminant distribution in groundwater and the DNAPL plume extent for the full-scale design of the treatment system (IT Corporation, 2002b). Results of the investigation were discussed further in Section 2.0.

In 2004, Shaw subcontracted the field implementation of the removal action at Plume 4-2 to Thermal Remediation Services (TRS), a small business firm with the experience and expertise to perform the technology utilized for the removal action. The selection of TRS was also due to a request by the Navy to allow simultaneous implementation of similar removal actions at this site and at Building 5 (Plumes 5-1 and 5-3). Building 5 is another IR site with potential DNAPL in the subsurface. To ensure consistency in the execution and administration of Plume 4-2 under the Navy Remedial Action Contract, Shaw provided oversight of TRS performance, including compliance monitoring, and project communication and coordination with the Navy.

2.0 Removal Action Description

This section describes the nature and extent of the inferred DNAPL removal action area and the removal action objectives. In addition, this section provides an overview of the treatment approach taken to address the DNAPL contamination in the groundwater.

2.1 Extent of Removal Action Area

As previously stated, DNAPL at Plume 4-2 was suspected based on the 1,1-DCE concentration in the groundwater. The location identified in the Engineering Evaluation/Cost Analysis (EE/CA) for DNAPL removal covered an area of approximately 120 feet in diameter (or 11,000 sf) and a maximum depth of 30 feet (TtEMI, 2001). The removal action boundary was established based on a concentration contour of 10,000 micrograms per liter (µg/L).

The results from the system DDI completed in 2002 revealed a much larger area required for the full-scale removal action than has been estimated in the EE/CA. Based on the later findings, the treatment area was nearly 35,000 sf and the maximum depth increased to 40 feet (IT Corporation, 2002b). The treatment boundary extended further east and west of the removal action plume originally established in the EE/CA. Figure 3, "Plume 4-2 (Building 360) Removal Action Area," shows the removal action plume described in the EE/CA, compared to the removal action plume area defined in the DDI.

2.2 Removal Action Objective

Historical investigation results identified 10 chlorinated volatile organic compounds (VOCs) in groundwater as the screening analytes (SAs) for monitoring of the removal action at Plume 4-2. These SAs were 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,1-dichloroethane, 1,1-DCE, 1,2-dichloroethane, cis-1,2-DCE, trans-1,2-DCE, PCE, trichloroethene, and vinyl chloride, with 1,1-DCE being the predominant species historically detected. According to the EE/CA, the primary objective of the removal action was to reduce the total SA concentrations in the groundwater to below 10,000 µg/L, to the extent technically and economically practicable. The EE/CA also identified electric heating of the soil and groundwater in the plume area as the recommended removal action alternative for Plume 4-2 (TtEMI, 2001).

2.3 Treatment Approach and System Layout

Based on the treatment area and depth, established after the DDI in 2002, TRS divided the plume into five regions, varied by areas and depths. The maximum treatment depth ranged from approximately 18 to 44 feet across the plume.

The treatment system involved the use of energized electrodes to generate heat resistively to accelerate removal of the VOCs from the subsurface. Electricity to the electrodes was supplied from a power supply and control unit and several field step-down transformers. The electrodes were placed in a 20-foot triangular grid across the plume. The grid layout and the five treatment regions are shown on Figure 4, "Plume 4-2 Treatment System Grid and Equipment Layout."

The treatment system also included a vapor recovery and treatment train and a liquid treatment train. Vapor captured from the subsurface was treated with vapor-phase granular activated carbon (GAC) prior to its discharge to the atmosphere. Condensed vapor and vapor-entrained liquid were treated with liquid-phase GAC prior to the discharge to the publicly-owned treatment works (POTW). A process schematic of the treatment system is presented in TRS' system documentation included in Appendix A.

3.0 Implementation of Removal Activities

Implementation of the removal action began with site preparation followed by system installation. Construction of the treatment system began in June 2006 and ended in October 2006. Upon completion of system installation, startup testing and routine operation proceeded. Details of the field implementation of the removal activities are presented in the following subsections.

3.1 Site Preparation

Prior to drilling for installing electrodes and other subsurface components, available facility record drawings were reviewed to identify locations of underground utilities, including inactive fire protection and steam lines. Utility clearance using a geophysical instrument was also conducted over drilling locations to aid in verifying the absence or presence of subsurface obstructions in the area.

Because a large portion of the treatment plume was beneath Building 360, which was constructed with a raised concrete floor including subfloor utility corridors, a survey of the existing utilities and other structures below the building floor was also performed. Approximate locations of the utilities and miscellaneous structures that were potential obstructions were marked on a facility layout map for use by TRS prior to borehole drilling. A copy of the building obstructions survey map is included in Appendix B.

In addition to the utility survey, asbestos pipe removal was performed at several locations to provide unrestricted access to electrode installation. Removed asbestos waste was contained and disposed of to offsite landfills (see Section 3.3 for further details). Concrete coring was also performed to allow access to the native soil below. Borehole clearance to the first 5 feet bgs was then performed by hand augering and/or air knifing before drilling proceeded. Borehole locations that encountered with subsurface obstructions within the top 5 feet bgs were marked and then shifted to new locations. Locations of the electrodes and monitoring points/wells affected by the subsurface obstructions inside the building as a result of the utility survey or borehole clearance were shifted a foot to a few feet away.

One electrode location outside Building 360 encountered ground refusal in and around the area during borehole clearance. This location was near the western boundary of the plume. It appeared to be a concrete slab (or similar structure) of several feet thick extending from the ground surface down and over a rather large surface area. Because electrode distance relative to one another had to be kept at some minimum distance (designed spacing was about 20 to 21 feet), there was no alternate location for that electrode. As such, the electrode, which was at grid point C5, was not installed (see Figure 4).

3.2 Treatment System Installation

System installation included constructing electrodes, vapor piezometers (VPs), temperature monitoring points (TMPs), groundwater monitoring wells, a vapor handling and treatment unit, and a liquid handling and treatment unit. All process equipment and piping were installed aboveground, within a fenced compound built outside of the groundwater plume treatment area (also referred to as the "hot zone"). Access to the "hot zone" was restricted by an alarm system that would sound a siren should the access security be breached. The general arrangement of the process equipment is shown in Figure 4. Installation of these components is described in detail below.

3.2.1 Electrodes

TRS installed 91 electrodes at depths of up to 45 feet bgs within the removal action plume. Each electrode, constructed of 3-inch diameter steel pipe with a slotted screen section in the upper portion, was installed within a 12-inch diameter borehole using a hollow-stem auger drill rig. The annular space around the steel casing at each electrode borehole was backfilled with steel shot pellets and graphite. The steel shot, consisting of zero-valent iron, was mixed with graphite and tremied into the annulus space. Approximately 94,725 pounds of steel shot and 5,550 pounds of graphite were used for the 91 electrodes. The average usage of the steel shot/graphite mix at each electrode was approximately 75 pounds per foot. A low-profile drill rig was used for the electrodes installed inside the building.

The slotted portion of the electrode was used for capture of vapor released from the groundwater during heating. Appendix A contains diagrams showing construction details of the electrodes installed at Plume 4-2. The installation depths of the electrodes, as well as the number within each of the five treatment regions are also summarized in Appendix A. As previously stated, one electrode at C5 location was not installed due to ground refusal.

3.2.2 Vapor Piezometers and Temperature Monitoring Points

Fourteen VPs and TMPs were installed across the treatment area using the hollow-stem auger drill rig and/or a Geoprobe® direct-push rig. Each pair of VP and TMP was co-located in the same borehole. The VPs, constructed of ¼-inch Teflon® tubing, were installed to about 3 feet bgs, while the TMPs, constructed of ¾-inch chlorinated polychlorinated vinyl chloride piping, were installed at depths corresponding to the electrodes within the same treatment regions. In each TMP, type T thermocouples were placed every 5 feet from the ground surface to the bottom of the monitoring point. Construction details of the VPs and TMPs are presented in Appendix A.

3.2.3 Groundwater Monitoring Wells

Seventeen groundwater monitoring wells were initially installed for monitoring of the treatment performance at the site. These wells, identified as MW4-2-1 through MW4-2-17, were installed to depths varying from 10 to 40 feet bgs, and were placed across the plume based on the 2002 DDI results. The wells were constructed of 2-inch diameter, stainless steel casing with 5 feet of 0.02-inch slotted screen, and were screened at intervals that corresponded to the depths where elevated VOC concentrations were found in the DDI. The wells were installed using a hollow-stem auger and/or a Geoprobe® direct-push rig. About 48 hours after installation, each monitoring well was developed in accordance with Shaw standard operating procedures for well development.

In August 2006, two more monitoring wells were installed in and around the plume. These wells were screened from 5 to 10 feet bgs and were used to help monitor and evaluate potential impacts on metals mobility from the treatment operation. Further details about these wells are discussed later in Section 5.0. A summary of well construction details and diagrams are presented in Appendix C.

3.2.4 Hot Vapor Conveyance Piping

Schedule 80 chlorinated polychlorinated vinyl chloride piping of size up to 10-inch diameter was used to convey hot vapor from the electrodes to the vapor extraction and treatment train. Piping from the electrodes was manifolded into one main line connecting to the vapor-condensing unit. Flow, temperature, and vacuum measuring ports, as well as the influent vapor sampling port were installed on the main conveyance pipeline. Data collected from these ports helped monitor the performance of the treatment system operation.

3.2.5 Vapor Extraction and Treatment Train

The vapor extraction and treatment train was made up of a vapor condenser, liquid-vapor separator vessels, six vapor phase GAC vessels, and a positive-displacement blower. Hot vapor captured from the treatment area passed through the vapor condenser for cooling before entering the separator, in which non-condensing vapor was separated from condensing liquid. The cooled vapor then continued through the vapor phase GAC vessels for treatment. The condensed liquid was pumped to the liquid handling and treatment train.

The vapor phase GAC vessels, each containing 1,000 pounds of carbon, removed the VOCs in the vapor stream to comply with the air emissions control requirements (primarily Regulation 8, Rule 47, Sections 301 and 302) established by the Bay Area Air Quality Management District (BAAQMD). These requirements were typical to soil vapor extraction (SVE) operations. Following treatment, the vapor stream was sent through the blower and discharged into the

atmosphere via a 20-foot tall stack. Except for the vapor phase GAC vessels and the blower, the other process equipment was installed within a secondary containment area.

3.2.6 Liquid Handling and Treatment Train

The liquid handling and treatment train consisted of a water-holding tank, liquid transfer pumps, cartridge filters, and liquid phase GAC vessels. Initially, 55-gallon carbon drums were used to treat the liquid consisting of mostly condensate. However, during system startup, it was determined that the carbon drums did not meet the pressure requirements. As such, TRS replaced the carbon drums with the pressure vessels that could withstand higher pressure (approximately 30 pounds per square inches) encountered with the liquid treatment system.

Condensate, formed after the vapor condenser, was pumped through the cartridge filters and the GAC vessels before being discharged to the POTW. The filtering system went through several modifications while in operation due to excessive sediment buildup within the system. TRS attributed the buildup to (1) significant groundwater and sediment entrainment from some areas within the plume, such as in the northwestern corner of the plume outside Building 360, and (2) biological growth inside the filtration units.

Treated liquid was discharged into the sanitary sewer via a manhole under the base-wide permit with the East Bay Municipal Utilities District (EBMUD). The discharge location is shown in Figure 4. Initially, the discharge was conveyed via a one-inch diameter line. Because of the groundwater and sediment issues with the treatment unit, one more discharge line was added to facilitate flow through the liquid treatment train. Flow measurements were recorded on both discharge lines to provide the total flow readings for EBMUD permit compliance.

To comply with discharge permit requirements, a holding tank with double containment was used to temporarily contain the treated condensate and groundwater during the system startup and testing period. As the treatment operation progressed, the tank was incorporated as part of the system components. Rainwater collected into the secondary containment and filter rinsate were pumped into the holding tank. From the holding tank, the water was then pumped through the liquid-phase GAC for treatment along with the condensate and groundwater before discharge to the sanitary sewer. A high-level sensor was installed inside the tank to shut off any running feed pump in the event of a high water level in the tank.

3.2.7 Power Supply and Connection

Power to the treatment system was fed from an existing transformer on the north end of Building 360. Three power poles were installed to bring the power cable from the transformer to the 2,000-kilowatt (kW) power control unit (PCU) furnished by TRS. Figure 4 shows the power drop location by the PCU within the treatment compound. From the PCU, electrical cables were run to four separate, field step-down transformers that supplied lower voltage power to the

electrodes. The PCU also supplied power to the electrical process equipment, such as the blower and the pumps.

3.2.8 Pre-Operational System Inspections and Testing

Pre-operational activities included leak testing of conveyance piping, functionality and safety testing of system components and control devices, and baseline groundwater sampling. System testing began on September 25, 2006 and continued with completion on October 19, 2006. Testing included visual inspections of installed components and a dry run of equipment to verify its functionality and readiness. Types of inspections and tests completed included the following:

- Visual inspection and leak test of the vapor and liquid conveyance piping
- Individual system component leak and function tests
- Equipment control interlocking test
- Vacuum influence test
- Voltage safety test
- Startup tests for energy application evaluation

Based on the startup test results, TRS determined that the system would be operating at approximately 150 to 300 volts. TRS also assessed that the vapor recovery system would exert sufficient vacuum influence within the vadose zone over the plume area based on their vacuum influence test results. The pre-operational test and inspection results were transmitted to the Navy for information on October 23, 2006 and are included herein in Appendix D.

3.3 Construction and Investigation-Derived Waste Handling

Waste generated from system installation and associated construction activities consisted of primarily asbestos-containing waste, drill cuttings, well development water, and the chromium-laden liquid encountered within two-below grade trenches inside Building 360. Copies of the waste manifests are provided in Appendix E.

Asbestos-containing waste was generated from the removal of utilities inside Building 360 prior to drilling for electrode installation. Approximately 3 cubic yards of non-friable asbestos-containing waste material were disposed of at Altamont Landfill in Livermore, California. Four cubic yards of friable asbestos-containing waste material were disposed of at Norcal Waste Systems Hay Road Landfill in Vacaville, California.

Drill cuttings were placed in soil bins. Following profiling, the cuttings were disposed of as nonhazardous waste to Altamont Landfill facility, except for two bins of soil containing elevated levels of chromium generated from the field treatment impact assessment activities. The impact assessment effort, described in detail later, was executed after the finding of chromium-laden liquid in the plating shop. The soil from the two bins was disposed of at Chemical Waste

Management, a Class I treatment, storage, and disposal (TSD) facility in Kettleman City, California. The liquid containing elevated levels of chromium was disposed of at the Chemical Waste Management TSD facility in Kettleman City.

The well development water was discharged into the sanitary sewer after profiling analytical results showed that the water quality met the EBMUD permit requirements. The request for discharge was approved by EBMUD on November 2, 2006 (EBMUD, 2006). The discharge was implemented immediately thereafter.

3.4 Additional System Design Investigation

On June 7, 2007, colored liquid was found in two below-grade trenches (also referred to as vats) inside the former plating shop of Building 360 while preparation of drilling for electrode installation was being conducted by TRS. Further visual inspections suggested the liquid contain chromium because of its greenish to yellowish color. Samples were immediately collected from two electrode locations and submitted for metals analysis. Analytical results confirmed the presence of chromium, including hexavalent chromium (Cr^{6+}), and other metals. Approximately 1,000 gallons of the colored liquid were later pumped from the two trenches into a double-contained Baker tank for subsequent disposal.

Because of the finding of chromium-containing liquid in the trenches, there became a concern about mobilizing chromium, especially Cr^{6+}, in the underlying groundwater during the electrical heating. As a result, following the Navy's technical direction, Shaw proceeded with additional system design investigation to assess impact on chromium and hexavalent chromium, with a focus in the area of the plating shop.

The additional investigation conducted in the month of August 2006 involved collecting soil and groundwater samples from a number of the electrode installation boreholes and installing two additional groundwater monitoring wells. Soil samples were taken directly from the open boreholes from surface to 5 feet bgs using a Geoprobe® direct-push rig. Groundwater samples were collected from the boreholes using a Hydropunch® direct-push sampler. Samples were submitted for metals, cyanide, and VOC analyses; results for soil and groundwater are summarized in Tables 1, "Summary of Additional System Design Investigation Soil Sample Results," and 2, "Summary of Additional System Design Investigation Groundwater Sample Results," respectively. Complete analytical data packages are provided in Appendix F. Figure 5, "Hexavalent Chromium in Soil, 5 feet bgs," and Figure 6, "Total Chromium in Soil, 5 feet bgs," show the distribution of hexavalent and total chromium concentrations in soil, respectively.

The two groundwater monitoring wells were installed on the north and south perimeters of the plume inside the building. The wells were labeled as MW4-2-18 and MW4-2-19, respectively (see Figure 4). The monitoring wells had the same construction details as the other 17 wells,

except that the two wells were screened from 5 to 10 feet bgs. Following development, the wells were sampled, along with MW360-2 located outside of the plume, south of Building 360. Samples were submitted for metals analyses only. Figure 7, "Chromium Isoconcentrations in Groundwater," shows the chromium and hexavalent chromium concentrations in groundwater prior to DNAPL removal.

3.5 Baseline and Progress Performance Sampling

The baseline groundwater sampling was performed after completion of the initial phase of the treatment impact assessment in August. All 17 groundwater monitoring wells were sampled for VOC analysis. In addition to the baseline sampling event, groundwater sampling was performed periodically during the treatment period to monitor the treatment performance at the site. Samples were collected initially from the 17 monitoring wells installed for the removal action. Near the end of the treatment period in May 2007, the two wells installed as part of the additional investigation effort were also sampled. The primary intent of adding these two wells to the monitoring network was to supplement the monitoring results for the shallower depths (i.e., 5 to 15 feet bgs) around the plating shop and, by doing so, to allow more complete evaluation of DNAPL removal progress at the site.

In each sampling event, groundwater was pumped through a dedicated cooling coil at each well using a low flow peristaltic pump before collected for field water quality measurements. The cooling coil was used to allow for safe boiling water sampling while minimizing volatilization of the VOCs in the samples. This procedure was also followed during the baseline sampling for consistency, per the *Final Sampling and Analysis Plan* (Shaw, 2006). After the water quality parameters, (i.e., pH, temperature, oxidation-reduction potential [ORP], dissolved oxygen [DO], turbidity, and specific conductance) were stabilized, samples were collected into 40-milliliter (mL) vials and submitted for VOC analysis.

Since TRS required the use of groundwater sample results to assist with system adjustment and optimization, sampling was conducted generally monthly between December 2006 and May 2007. One round of sampling was conducted in July 2007 after the shutdown of the system to verify the anticipated drop in the VOC concentrations at some of the "hot" wells. Table 3, "Summary of Groundwater SA Concentrations from Baseline through Post-Treatment," summarizes the groundwater SA concentrations beginning from the baseline sampling event. Complete laboratory analytical data packages are provided in Appendix G. Groundwater concentration distributions from baseline through the progress sampling are presented in Figure 8, "Plume 4-2 Baseline and Progress Treatment Sampling Results."

3.6 Discharge and Emissions Monitoring

A part of the routine treatment system operation involved monitoring of the air emissions and treated effluent from the system for compliance purposes. Although no air permit was required for the vapor extraction system as the removal action was conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act requirements, the system was operated in conformance with the BAAQMD requirements for typical SVE operations. Air emissions from the treatment system were monitored using a field instrument, supplemented with results from influent vapor sampling. The vapor samples were collected in general on a monthly basis and submitted for U.S. Environmental Protection Agency TO-15 analysis.

Additional vapor samples were also obtained from the effluent of the vapor phase GAC treatment train during the startup of the system to verify no immediate carbon breakthrough by vinyl chloride. The additional sampling was requested by BAAQMD prior to commencement of the treatment operation (*Notification of Proposed Six Phase Heating/Vapor Extraction at Alameda Point – Bldg. 360, IR Site 4, Plume 4-2* [BAAQMD, 2006]). All vapor samples were collected using SUMMA canisters. Sample results not only did not show detection of vinyl chloride in the effluent but also indicated low mass emissions of the five regulated VOCs in the recovered vapor stream. According to BAAQMD Regulation 8, Rule 47, the five regulated organic pollutants are benzene, methylene chloride, PCE, trichloroethene, and vinyl chloride. Laboratory data packages are provided in Appendix H.

Field measurements of the vapor concentration were collected at the inlet, midpoint, and outlet of the vapor phase GAC treatment train using a photoionization detector (PID) with a 11.7 electro-volt lamp. Monitoring was generally conducted once daily during the manned operation of the treatment system. Since the predominant VOC species in the vapor stream was 1,1-DCE, the PID measurements of total VOCs generally corresponded relatively well to the laboratory results.

Discharge to the POTW was also monitored through sampling of the treated effluent from the condensate treatment train. Monitoring was performed in accordance with the basewide discharge permit (Number 5024981 2) issued by EBMUD in September 2006. After results of a startup sample verified that the effluent met the discharge criteria, sampling of the effluent was performed on a monthly basis from November 2006 through July 2007. Sample results and flow data were also submitted to EBMUD with approval from the Navy via quarterly discharge reports. Copies of the quarterly reports were distributed to the Navy in each submittal to EBMUD. No exceedances or violations of the discharge to the POTW occurred in the course of the treatment system operation at the site.

3.7 System Optimization

During treatment operation, adjustments were made to optimize the system performance to focus mostly on subsurface energy distribution and VOC concentration reduction within the plume. Groundwater temperatures were one of the key operation parameters used in combination with well sampling results to help with decisions on system adjustment and optimization. It has been from past experiences that a substantial reduction in the VOC concentration is achievable when the groundwater temperature reaches the boiling point.

The general optimization approach was as follows: once the well sampling results indicated that the VOC concentrations were below the removal action goal of 10,000 µg/L and the temperatures at those wells were maintained for a week or so, power supply was then redistributed to increase energy supply to some other areas that had shown cooler subsurface temperatures and limited VOC concentration reduction. In few occasions, some electrodes around the wells that had met the removal action goal were also temporarily turned off to facilitate power redistribution to the cooler areas. For instance, on March 22, 2007, TRS shut down 22 electrodes around MW4-2-1, MW4-2-4, MW4-2-6, and MW4-2-15 after the March sampling results indicated that the VOC concentrations at these wells dropped below 10,000 µg/L and the temperatures ranged from 94°C to 116°C. This allowed for increased energy input in other needed areas, especially inside Building 360 where some monitoring wells had shown relatively small reduction in the VOC concentrations. These electrodes were later brought back to service after receipt of a request from the Navy to continue treatment of the entire plume in late March to further reduce the VOC concentrations in the groundwater.

When power redistribution under the existing power supply configuration was not enough to enhance the treatment performance in certain areas of the plume, additional power cables were installed to facilitate power delivery to those areas. In early June 2007, TRS installed additional electrical cables to channel power from the PCU directly to several electrodes in the area around MW4-2-19, successfully bringing the VOC concentration in the area from 34,000 µg/L recorded in May 2007 to below the initial removal action goal. The July 2007 sample results showed that the total VOC concentration at MW4-2-19 dropped to about 1,400 µg/L, well below the treatment goal of 10,000 µg/L.

3.8 Termination of Treatment

Groundwater treatment continued at Plume 4-2 until a treatment asymptote was reached. The treatment asymptote was determined based on the following operation and performance parameters:

- Well VOC concentrations were below 10,000 µg/L and showed a general trend of reaching asymptotic levels

- Vapor VOC mass captured in the vapor recovery system approached an asymptote
- The average groundwater temperature across the plume was maintained near or above the water boiling points

As of May 2007, the average groundwater temperature reached to 95°C, with a one-degree gradual rise over a two- to three-week period. Sampling results from late May showed that almost all well concentrations had reached below 10,000 µg/L and simultaneously approached asymptotic levels. The vapor VOC mass recovery rate had also not shown substantially changed throughout the period. Further discussions of the treatment performance are provided in Section 4.0. Based on these observations, by early July 2007, the system was shut down and treatment operations ceased.

3.9 Post-Treatment Sampling

Another round of sampling post-system shutdown was performed in September 2007 to determine the post-treatment levels of the chlorinated VOCs in the treatment plume. Sample results are also included in Table 3. In October 2007, groundwater samples were collected from select wells for metal analyses to determine effects, if any, on mobility of metals (primarily hexavalent chromium) post-treatment of the groundwater. The sample from MW4-2-17 was also analyzed for VOCs. The decision to sample the monitoring well again for VOCs was a result of the finding from the September sampling event.

4.0 Removal Action Effectiveness Assessment

This section discusses the effectiveness of the treatment system based on its effects on SA concentrations and mass removal and cost. The treatment effectiveness, including effects on chromium mobility during treatment, is also discussed.

4.1 Effects on Screening Analyte Concentrations and Mass Removal

This section presents the effects of the treatment system on the groundwater SA concentrations as well as any impacts on the mobility of chromium, with specifics on achievement of the treatment goal of 10,000 µg/L for the SAs. The changes in the SA concentrations in the groundwater were also used to estimate mass removal attributed to the in-situ treatment.

4.1.1 Changes in Screening Analyte Concentrations

Based on the groundwater sampling results, the SA concentrations in the groundwater dropped below 10,000 µg/L by July. The average reduction of SA concentrations across the treatment area varied from 55% to nearly 100%. Table 4, "Groundwater VOC Concentration Comparison between Baseline and Last Progress Sampling," shows a comparison of the SA concentrations between baseline and the May/July sampling events. The lowest percentage of reduction was recorded at MW4-2-17, while all others were near 90% and above. The cause of the low reduction at MW4-2-17 was not readily known since the groundwater temperature near the monitored interval of the well was over 100 degrees Celsius (°C) (based on the adjacent TMP Q13), a temperature at which significant reductions in the groundwater concentrations occurred in all other monitoring wells within the plume.

Figure 9, "Well SA Concentration Changes from Baseline through Treatment," shows the changes in the SA concentrations versus temperature at the 17 monitoring wells from baseline through treatment. As shown in the figures, the SA concentrations at most of the wells generally decreased to below the treatment goal as temperature rose above 100°C. Some wells also displayed initial rise in the SA concentrations, followed by a gradual reduction as treatment continued. The initial rise could likely be due to an increase in the solubility of the SA sorbed onto the soil into the groundwater caused by heating. As the temperature continued to rise, the SA began to dissipate via various pathways, including volatilization, resulting in decreases in their concentrations in the groundwater. Discussions of the SA mass removal pathways are presented later in the document.

Concentration reduction in the shallower depths between 5 and 15 feet bgs beneath the building had shown some limitation. As shown in Figure 8, MW4-2-14 in particular showed no apparent reduction in the total SA concentration between December 2006 and March 2007. The relatively

low decrease in the SA concentrations in the shallower depths prompted the decision to include the two monitoring wells, MW4-2-18 and MW4-2-19, into the SA monitoring network. The primary goal was to help assess the effectiveness of the heat treatment of the shallow groundwater and provide more complete evaluation of DNAPL removal progress and performance beneath the building. As the May sampling results showed, the total SA concentration at MW4-2-19 was found above the removal action goal, prompting another decision to facilitate energy delivery to that area, as previously discussed in Section 3.7.

The September 2007 post-treatment VOC sampling results showed additional changes of SA concentrations in the groundwater. This sampling event was conducted two months after termination of the treatment operation. A comparison of the sampling results between May/July 2007 and September 2007 is shown in Table 5, "Groundwater Chlorinated VOC Concentration Comparison between May/July and September 2007." All except one well showed a total SA concentration of below 10,000 µg/L. The well with a total SA concentration of 12,000 µg/L was MW4-2-17, with 1,1-DCE the predominant SA species. On October 23, 2007, six wells were sampled to determine post-treatment metal levels in the plume. MW4-2-17 was resampled for only VOC on that day. The new total SA concentration at MW4-2-17 was measured at approximately 4,700 µg/L, well below the 10,000 µg/L treatment goal.

Results of a statistical analysis of all September groundwater concentrations also indicate that the removal action goal of below 10,000 µg/L for the groundwater within the treatment plume was achieved. Following the U.S. Environmental Protection Agency guidance for the statistical analysis, the mean SA concentration was estimated at 1,600 µg/L, with a 95% upper confidence limit of approximately 3,000 µg/L. The statistical evaluation approach and results are provided in Appendix I.

The groundwater within the treatment plume was mostly in a reducing condition. The DO level ranged from 0.2 to 2.0 mg/L, with only one well with a DO level at 2.0 mg/L, compared to 11 wells with a DO level at 2.0 mg/L and greater during the baseline sampling. The ORP values ranged from -280 to 68 millivolts, with most of the values in the negative, versus the positive values found in most of the baseline samples. Based on these field readings, the groundwater remained in a mostly anoxic, reducing condition. Table 6, "DO and ORP Data Comparison between Baseline and Post-Treatment," shows the DO and ORP values measured in the baseline and the two post-treatment sampling rounds.

4.1.2 Effect on Metals During Treatment

This section discusses about the effects of the in-situ groundwater treatment by electric resistance heating on metals. The metals of concern were originally chromium and hexavalent

chromium only. However, it was later noted that increases in arsenic and barium concentrations occurred during and after the treatment. As such, the effects on arsenic and barium are also discussed in this section.

4.1.2.1 Effects on Chromium

Results of the impact assessment effort indicated that chromium detected in soil and groundwater was mostly confined to the area directly beneath the trenches within the plating shop (see Figures 5 through 7). As such, four groundwater monitoring wells located outside and two inside the plating shop were selected to monitor for changes in the chromium concentration, particularly for Cr^{6+}, during the treatment of the groundwater. Any increase in the concentrations of total chromium and Cr^{6+} would be indicative of (1) potential migration of the metal species and/or (2) formation of Cr^{6+} in the course of the treatment. Sample results are presented in Table 7, "Summary of Additional System Design Investigation Groundwater Sample Results."

Based on the sampling results, there was no apparent indication of migration of chromium in the groundwater during the treatment process. Figure 10, "Plume 4-2 Chromium Concentration Changes in Groundwater During and After In-Situ Treatment," displays the concentrations of total chromium and Cr^{6+} within the first few months of the treatment operation and post-treatment. This finding is expected due to the presence of a reducing condition in the groundwater during and right after the treatment.

4.1.2.2 Effects on Arsenic and Barium

Although no apparent mobility issue was noted with chromium, increases in concentrations of arsenic and barium were observed in several groundwater monitoring wells, including MW4-2-11 and MW4-2-19. As previously mentioned, these two chemical species were not part of the metals of concern identified during the additional system design investigation, and were therefore not specifically monitored for. The highest arsenic concentration was found at MW4-2-11, where the concentration increased from 3.7 µg/L from baseline to 117 µg/L in February 2007 (nearly 4 months after heating had begun). The arsenic concentration continued to rise to 160 µg/L based on the October 2007 sampling results. The highest barium concentration was found at MW4-2-19, where the concentration increased from 158 µg/L from baseline to 1,170 µg/L in February 2007. The arsenic concentration at MW4-2-19 also increased from 2.2 µg/L to 22.8 µg/L between the same timeframe. During the October 2007 sampling event, arsenic and barium at MW4-2-19 were found at 46.2 µg/L and 1,020 µg/L, respectively. The concentrations of arsenic and barium remained above the respective base-wide background levels.

The concentration rise of these two metal species was probably because of the reducing condition and rising temperature of the groundwater during the treatment. In the reducing condition, arsenic becomes more soluble. As shown in Tables 6 and 7, its relatively high concentrations were generally accompanied with low DO and ORP at those wells. In higher groundwater temperature, barium salt would become more soluble, resulting in increases in the groundwater concentrations. Barium sulfate, a barium salt, can also be affected by changes in reduction-oxidation potential. The reduction of sulfate to sulfide in a reducing condition would result in an increase in the barium concentration in the groundwater within the plume. However, these conditions are reversible. The increases in the groundwater concentrations of these two metal species are, therefore, expected to be temporal and spatially contained when the groundwater plume returns to the oxic condition with an increase in the ORP.

4.1.3 Mass Removal Estimate

The amount of chlorinated VOC mass removed as a result of the treatment is roughly determined based on the difference in the residual mass estimated within the plume before and after treatment. The residual mass within the treatment plume is approximated based on (1) the approximate lateral and vertical extent of the plume, (2) an assumed 30 percent of water-filled porosity, (3) an assumed 0.1% of organic carbon content (for sandy soil) and an average bulk soil density of approximately 50 kilograms per cubic foot, and (4) estimated concentrations of the VOC sorbed onto the soil particles (assumed in equilibrium with the groundwater concentrations).

The first basis was used to calculate the physical volume of the treatment zone. The second basis was to determine the groundwater treatment volume which was further divided for the five regions as previously described. Using the average groundwater concentrations for each screened interval within each region, the groundwater VOC mass in each screened layer region was estimated, and the total dissolved phase mass in each region as well as across all five regions was determined.

The third and fourth bases were used to provide an estimate of the VOC mass in the soil in the saturated zone. Using the average groundwater concentrations, the equilibrium soil concentration for each of the VOCs (or SA) was calculated based on the following soil adsorption equation:

$$C_s = K_d * C_w$$

Where,

C_s = soil concentration of the VOC species
K_d = distribution coefficient for the VOC species, also equals to $K_{oc} * f_{oc}$

K_{oc} = soil adsorption coefficient for the VOC species normalized for soil organic carbon content
f_{oc} = fractional organic carbon content in soil
C_w = groundwater concentration of the VOC species in equilibrium with its soil concentration, C_s

With the average soil concentration determined for each screened interval within each region, the soil VOC mass for the screened layer in each region was estimated from the soil volume and density, and the total soil mass across the region and the overall treatment area was determined. Together with the estimated groundwater dissolved phase mass, the overall VOC mass in the treatment zone was determined. Based on the groundwater sample results obtained between baseline (August 2006) and post-treatment (September 2007), the total chlorinated VOC mass removed from within the treatment plume was estimated at 2,800 pounds. A majority of the mass reduction was from 1,1-DCE.

It is postulated that the VOC mass removal from the subsurface during the in-situ treatment was through several mechanisms – volatilization, groundwater recovery, hydrolysis, biodegradation, oxidation-reduction reactions, and other thermally-enhanced chemical reactions. These mass removal mechanisms are discussed further below.

4.1.3.1 Volatilization

Since all SAs are volatile compounds and their volatilities are directly proportional to temperature, the increase in the groundwater temperature during the electric resistance heating would therefore accelerate the mass transfer of the SAs from the groundwater into the vapor phase – a physical process referred to as volatilization. Most of the SAs volatilized into the vapor phase would be captured, as soon as they entered the vadose zone, by a vapor recovery well mounted locally at the top of each electrode. However, there could be some that might not have been fully captured if they had strayed outside the vacuum influence of the vapor recovery wells.

According to the vacuum measurements taken by TRS at the vapor piezometers in the midst of the treatment, some levels of vapor capture were maintained. However, some of the vacuum readings were recorded at or slightly below zero. Although the measured values might be indicative of the steam pressure buildup as heating continued, they might also suggest small to no vacuum influence at those locations. During the treatment operations, periodic adjustment of the operating vacuum at some vapor recovery wells was made to reduce entrainment of groundwater and sediment into those wells. Further discussions of the groundwater entrainment are presented in Section 4.1.3.2. The reduction of the applied vacuum at the recovery wells could result in a lack of sufficient vacuum to capture all offgas in the vadose zone within the treatment area, resulting in an unaccounted loss of some of the VOC mass removed.

Based on the offgas influent vapor sample results and the vapor extraction flow rates recorded, the total VOC mass recovered in the vapor stream was estimated at 200 lbs. Figure 11, "Cumulative VOC Mass Recovery and Temperature Plots versus Hours of Operation During In-Situ Groundwater Treatment," presents plots of the cumulative VOC mass captured in the offgas influent and average groundwater temperature over hours of treatment operation from October 2006 to July 2007.

4.1.3.2 Groundwater Recovery

Another mechanism that assisted in the removal of the chlorinated VOCs from the subsurface was recovery of groundwater via vacuum-enhanced entrainment in vapor wells. Groundwater entrainment into the vapor recovery wells occurred frequently from portions, if not all, of the treatment plume area. Besides physical observation, the substantial increases in the VOC concentrations in the untreated liquid influent stream that had been periodically monitored further verified the occurrence of groundwater entrainment into the extraction system.

Although entrainment of the groundwater into the vapor recovery system could assist in the removal of the chlorinated VOCs from the groundwater, this process was not a part of the intended removal mechanism. The condensate treatment train was designed to handle primarily a small amount of water condensed from the steam vapor captured by the vapor recovery wells; the relatively large quantity of groundwater collected via entrainment thus adversely affected the operation and performance of the condensate management system. As a result, periodic adjustment of the operating vacuum at the wellheads had to be made as part of the system optimization effort to minimize groundwater entrainment into the system. Over an eight-month system operation period, a total of one million gallons of treated condensate/groundwater mix were processed through the condensate treatment system.

The substantially low VOC concentrations found in the condensate/groundwater stream also resulted in significantly smaller contaminant mass in the aqueous phase than in vapor phase. Based on the untreated condensate sampling results, the amount of VOCs captured in the liquid phase was estimated at 1.4 pounds, as compared to 200 pounds from the recovered vapor.

4.1.3.3 VOC Mass Removal via Other Pathways

As previously stated, the mass of VOCs in the subsurface could have been depleted via biological and/or chemical reactions and other physical transport means that occurred more readily in elevated temperatures. Some of the biological and chemical reactions include hydrolysis, reductive de-halogenation (abiotic), and biodegradation. Hydrolysis of 1,1,1-trichloroethane into acetic acid and dehydrohalogenation into 1,1-DCE has been documented (*Using the Abiotic Transformation Rate of 1,1,1-Trichloroethane to Estimate the Date of Discharge* [Britton et al, 2006]). Dehalo-elimination is likely the mechanism in which 1,1-DCE might have been partly removed in an abiotic reduction process. One characteristic

product of such a reaction is acetylene (*Transformation of Halogenated Aliphatic Compounds* [Vogel et al, 1987]).

Abiotic reductive dehalogenation of chlorinated VOCs is also expected to occur in groundwater at sites with presence of ferrous iron and strong reducing conditions. There has been testing at some sites that resulted in approximately 40 percent of 1,1-DCE loss in sandy soil containing reduced iron (*Abiotic and Biotic Pathways in Chlorinated Solvent Natural Attenuation* [Brown et al, 2006]). As previously mentioned, the steel shot used in the conductive backfill at each electrode contained zero-valent iron. With the groundwater becoming more reducing as the treatment progressed, reductive dechlorination of the chlorinated VOCs, such as 1,1-DCE, into non-chlorinated alkanes and alkenes could likely have occurred.

Although these processes were not specifically monitored for during the treatment, some of the end or byproducts noted, such as biofouling in the condensate handling and treatment components, suggested the possible occurrence of such processes in various stages of the groundwater treatment by electric resistance heating. However, as these processes were not monitored, VOC mass lost via these processes could not be determined or accounted for.

Besides mass depletion due to reactions, VOC migration outside of the treatment area in dissolved and/or vapor forms could account for additional loss of the chlorinated VOC mass from the plume. As previously discussed, some of the chlorinated VOC volatilized from the groundwater might not have been captured by the vapor recovery wells due to limited vacuum influence from those wells. This could also occur to the chlorinated VOC species migrated into the stagnant zone surrounded by the vapor recovery wells on top of the electrodes. In this case, the VOC would or could be left in the vadose zone soil with the mass not accounted for.

4.2 Treatment Cost

Treatment costs associated with this removal action included primarily those incurred for (1) design, construction, and operation of the treatment system by TRS, (2) site preparation, (3) electricity for supplying system power, (4) additional system design investigation, (5) system sampling and analysis and performance monitoring, and (6) system operational support by Shaw field personnel. Excluding management and general administrative costs, the total cost incurred was approximately $3.5 million. This cost includes the power consumption to provide a total energy input of 5,391,216 KW hours over an eight-month treatment period. A rough cost breakdown is presented as follows:

- System design, construction and operation (included electricity) – $3.0 million
- Site preparation (included system dismantling) – $100,000
- Additional System Design Investigation – $ 80,000
- System sampling and analysis and performance monitoring – $ 100,000

- O&M support – $200,000

Based on the estimated reduction of VOC mass within the treatment plume, the cost for the removal action at Plume 4-2 was calculated to be around $1,200 per pound of chlorinated VOC mass removed. The equivalent energy cost was estimated at $0.65 per kilowatt-hour input to the subsurface.

5.0 Post-Removal Action Conditions

The bulk mass of the chlorinated VOCs has been removed to below the removal action goal. A residual amount of the organic contaminant is still present in dissolved phase. Based on the post-treatment sampling results, the main constituent present is 1,1-DCE. Figure 12, "Plume 4-2 Post-Removal Action SA Concentrations in Groundwater," shows the post-removal action groundwater VOC concentrations within the treatment area.

The presence of zero-valent iron in the electrode backfill may continue to provide further removal of the dissolved phase chlorinated VOCs in the groundwater via reductive dechlorination. However, the extent of this treatment with the electrode backfill has not been established. It is not known if the chlorinated VOCs could be further reduced passively to respective final cleanup goals (such as their respective maximum contaminant levels).

6.0 References

Bay Area Air Quality Management District, 2006, *Notification of Proposed Six Phase Heating/Vapor Extraction at Alameda Point - Bldg. 360, IR Site 4, Plume 4-2*, Electronic Mail from Robert Cave to Neil Hey, Shaw Environmental, Inc, September 14.

Britton et al, 2006, *Using the Abiotic Transformation Rate of 1,1,1-Trichloroethane to Estimate the Date of Discharge*, Annual International Conference on Soils, Sediments, and Water, University of Massachusetts, Amherst, Masschusetts, October.

Brown, Richard, R. Hines, C. L. M. C. Leahy, J. Cho, 2006, *Abiotic and Biotic Pathways in Chlorinated Solvent Natural Attenuation,* Proceedings of Battelle's Fifth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, May 21-26.

Canonie Environmental Services, 1990, *RI/FS Work Plan, NAS Alameda, Alameda, California,* Prepared for the U.S. Department of the Navy, Southwest Division, February.

East Bay Municipal Utilities District, 2006, *US Navy Alameda Pt 10-18-2006 Results for 06J179*, Electronic Mail from Molly Ong to Charlie So, Shaw Environmental, Inc., November 2.

IT Corporation, 2002a, *Final Removal Action Project Plans, Installation Restoration Sites 4 and 5 DNAPL and Dissolved Source Removal Action, Alameda Point, Alameda*, California, February 8.

IT Corporation, 2002b, *Data Transmittal of Design Investigation (Phase III) for Plume 4-2, IR Site 4, Alameda Point, Alameda*, California, August 22.

PRC Environmental Management Inc., 1997, *Tidal Influence Study Letter Report*, NAS Alameda, California, June.

Shaw Environmental, Inc., 2006, *Final Sampling and Analysis Plan, Addendum No. 2, DNAPL Removal Action, Installation Restoration Sites 4 and 5, Alameda Point, Alameda*, August 15.

Tetra Tech EM Inc. and Einarson, Fowler, and Watson, 1998, *Data Transmittal Memorandum for Sites 4 and 5 Chlorinated Solvent Plume Definition and Site 14 Sump Investigation at Alameda Point, Alameda, California*, Prepared for Department of the Navy Western Division, Naval Facilities Engineering Command, San Bruno, California, June 26.

Tetra Tech EM Inc., 1999, *Draft CLEAN II-Operable Unit-2 Remedial Investigation Report,* Alameda Point, Alameda, California, June.

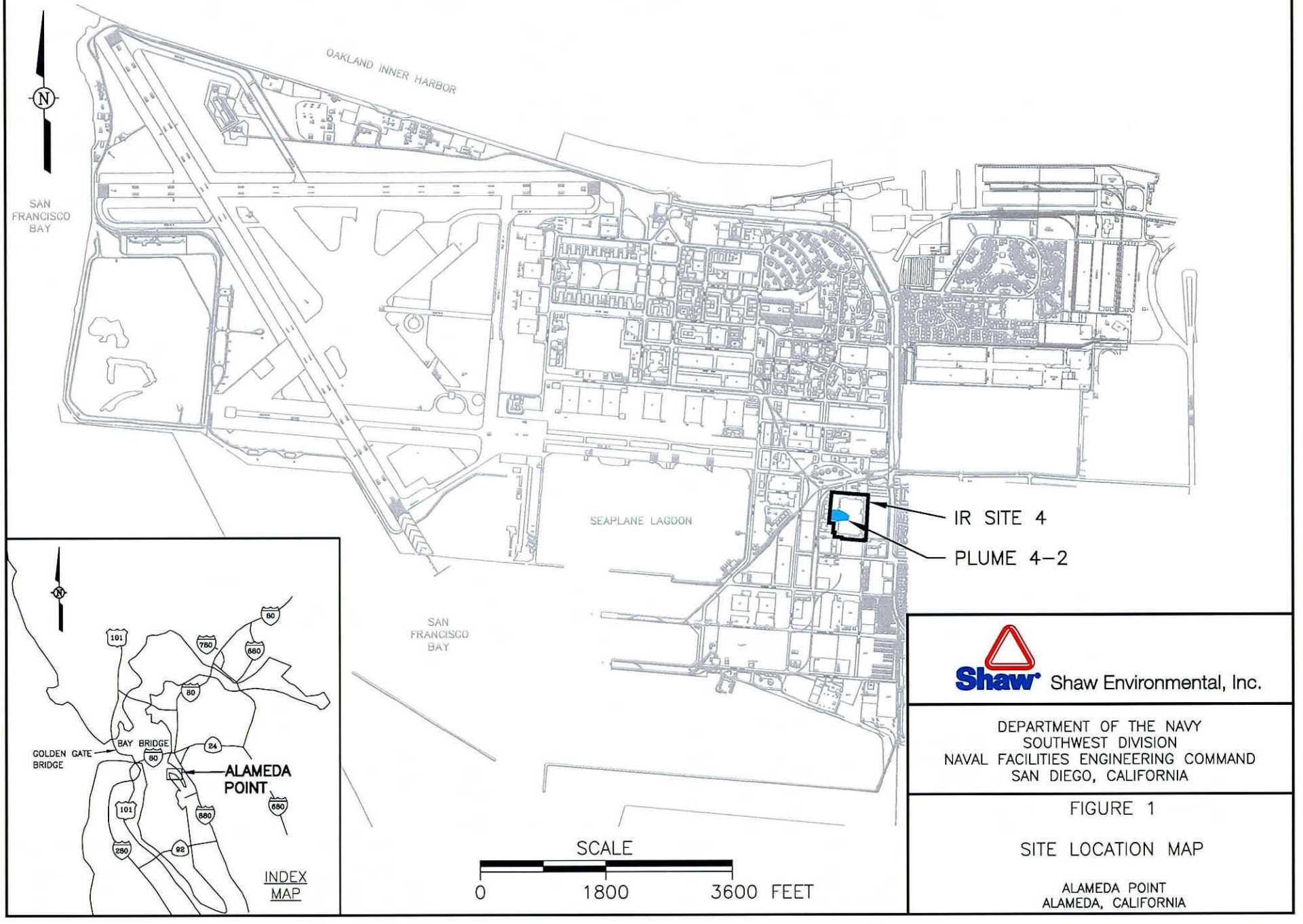
Tetra Tech EM Inc., 2000, *Determination of the Beneficial Uses of Groundwater at Alameda Point, Alameda, California, Final*, July.

Tetra Tech EM Inc., 2001, *Installation Restoration Sites 4 and 5 Dense Nonaqueous Phase Liquid and Dissolved Source Removal Action Engineering Evaluation and Cost Analysis (EE/CA), Alameda Point, Alameda, California*, January 5 (Note: Revisions from February 5 were considered).

Vogel, T. M., C. S. Criddle and P. L. McCarty, 1987, *Transformations of Halogenated Aliphatic Compounds*, Environ. Sci. Technol. 21 (8), 722-736.

Figures

IMAGE	X-REF	OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		DRAWING NUMBER
---	ALA1BASE	CONC	BJ	10-18-07	CS	10-18-07	DC	11-12-07	124716-A2



Shaw Environmental, Inc.

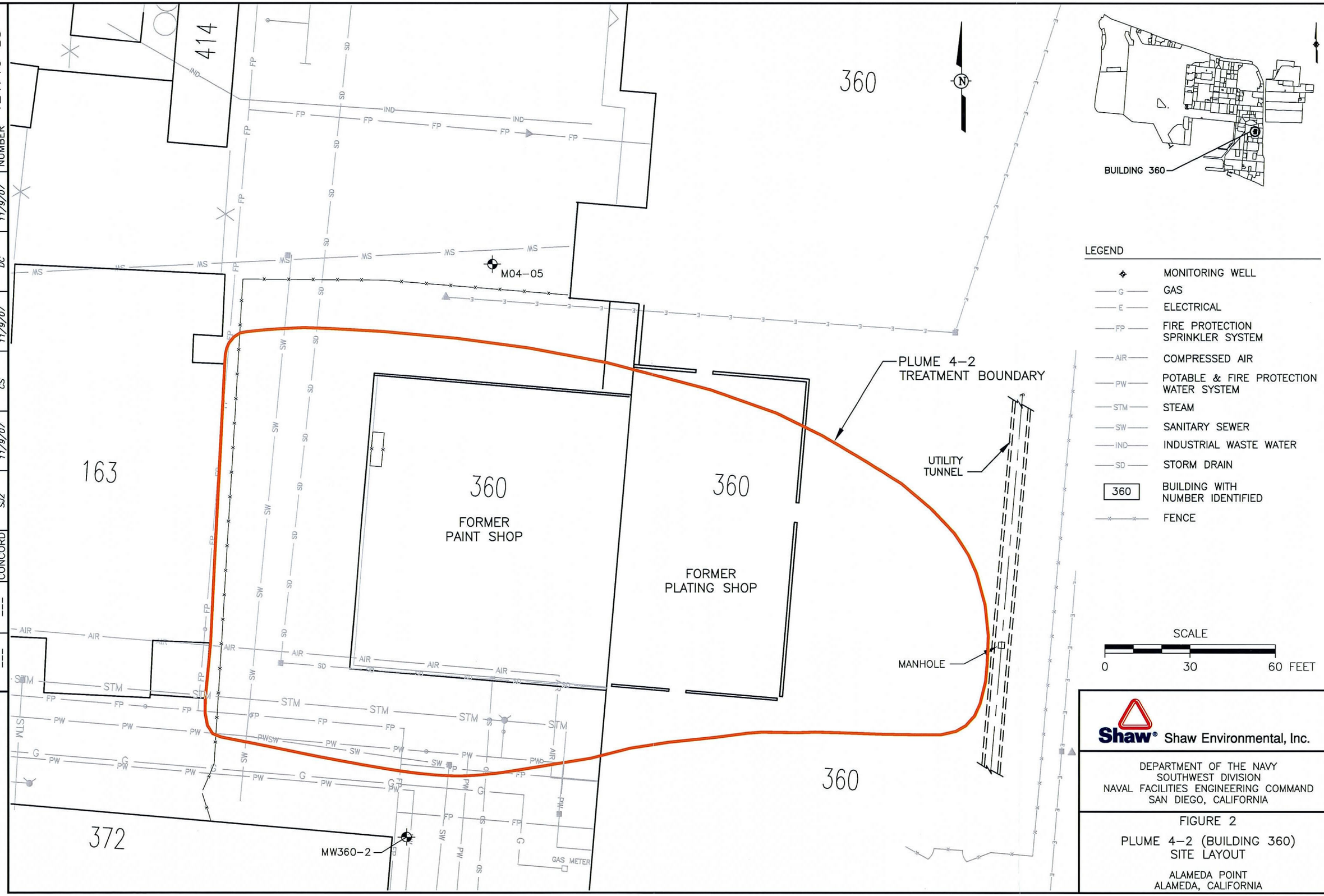
DEPARTMENT OF THE NAVY
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
SAN DIEGO, CALIFORNIA

FIGURE 1

SITE LOCATION MAP

ALAMEDA POINT
ALAMEDA, CALIFORNIA

IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
---	---	CONCORD	SJZ 11/9/07	CS 11/9/07	DC 11/9/07	124716-B5



Shaw® Shaw Environmental, Inc.

DEPARTMENT OF THE NAVY
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
SAN DIEGO, CALIFORNIA

FIGURE 2

PLUME 4-2 (BUILDING 360)
SITE LAYOUT

ALAMEDA POINT
ALAMEDA, CALIFORNIA

IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
---	---	CONCORD	SJZ 10/19/07	CS 10/19/07	DC 11/12/07	124716-B6

414

360

163

372

M04-05

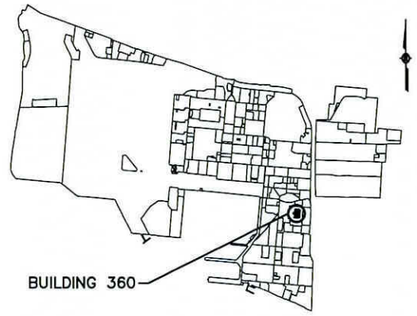
MW360-2

PLUME 4-2 TREATMENT AREA ESTABLISHED BASED ON SUPPLEMENTAL DESIGN DATA INVESTIGATION BETWEEN 2001 AND 2002 (TREATMENT DEPTH TO 40 FEET BGS)

TREATMENT AREA INITIALLY ESTABLISHED IN THE 2001 EE/CA (TREATMENT DEPTH TO 30 FEET BGS)

UTILITY TUNNEL

GAS METER



LEGEND

- MONITORING WELL
- POWER POLE INSTALLED IN 2006 FOR TREATMENT SYSTEM
- G — GAS
- E — ELECTRICAL
- FP — FIRE PROTECTION SPRINKLER SYSTEM
- AIR — COMPRESSED AIR
- PW — POTABLE & FIRE PROTECTION WATER SYSTEM
- STM — STEAM
- SW — SANITARY SEWER
- IND — INDUSTRIAL WASTE WATER
- SD — STORM DRAIN
- 360 — BUILDING WITH NUMBER IDENTIFIED
- FENCE

SCALE

0 30 60 FEET

Shaw® Shaw Environmental, Inc.

DEPARTMENT OF THE NAVY
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
SAN DIEGO, CALIFORNIA

FIGURE 3

PLUME 4-2 (BUILDING 360)
REMOVAL ACTION AREA

ALAMEDA POINT
ALAMEDA, CALIFORNIA

IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
---	---	CONCORD	SCHAEFFER 11/12/07	CS 11/12/07	DC 11/12/07	124716-B7

TREATED OFF-GAS EMISSIONS STACK

TREATMENT EQUIPMENT AREA

TREATED CONDENSATE EFFLUENT DISCHARGE PIPING

EXCESS CONDEN. TANK

VR BLOWER

VAPOR GAC VESSELS

LIQUID GAC VESSELS

COOLING TOWER

CONDENSER

POWER CONTROL UNIT (PCU)

POWER DROP FROM EXISTING TRANSFORMER TO PCU

M04-05

TANK

4kV SWITCHGEAR

OVEN

MW4-2-1 20'-25'

MW4-2-2 31'-36'

MW4-2-18 6'-11'

REGION 1
5' TO 40' BGS
7440 SQ FT

REGION 2
5' TO 29' BGS
4320 SQ FT

REGION 3
5' TO 18' BGS
3150 SQ FT

REGION 4
5' TO 44' BGS
9290 SQ FT

REGION 5
5' TO 35' BGS
10,200 SQ FT

MW4-2-3 30'-35'

MW4-2-9 13'-18'

MW4-2-8 35'-40'

MW4-2-7 26'-31'

MW4-2-6 15'-20'

MW4-2-14 6'-11'

MW4-2-11 5'-10'

MW4-2-12 26'-31'

MW4-2-13 35'-40'

MW4-2-5 32'-37'

MW4-2-4 25'-30'

MW4-2-16 9'-11'

MW4-2-17 26'-31'

MW4-2-10 25'-30'

MW4-2-19 6'-11'

MW4-2-15 26'-31'

MW360-2

BUILDING 163

360 ANNEX

BUILDING 360

MEZZANINE

VAT

SEWER MANHOLE DISCHARGE POINT TO POTW

SOURCE:
ELECTRODE AND EQUIPMENT LAYOUTS ARE BASED ON AS-BUILT PLOT PLAN DEVELOPED BY THERMAL REMEDIATION SERVICES.

SCALE
0 25 50 FEET

LEGEND

- ELECTRODE AND VAPOR RECOVERY WELL
- GRID ID — TEMPERATURE MONITORING POINT
- MONITORING WELL XX'-XX' (SCREEN INTERVAL WHERE SPECIFIED)
- ELECTRODE NOT INSTALLED DUE TO SITE CONDITIONS
- TREATMENT AREA BOUNDARY
- POWER POLE INSTALLED IN 2006 FOR TREATMENT SYSTEM
- FENCE
- STEP DOWN TRANSFORMER
- ELECTRODE GRID

Shaw® Shaw Environmental, Inc.

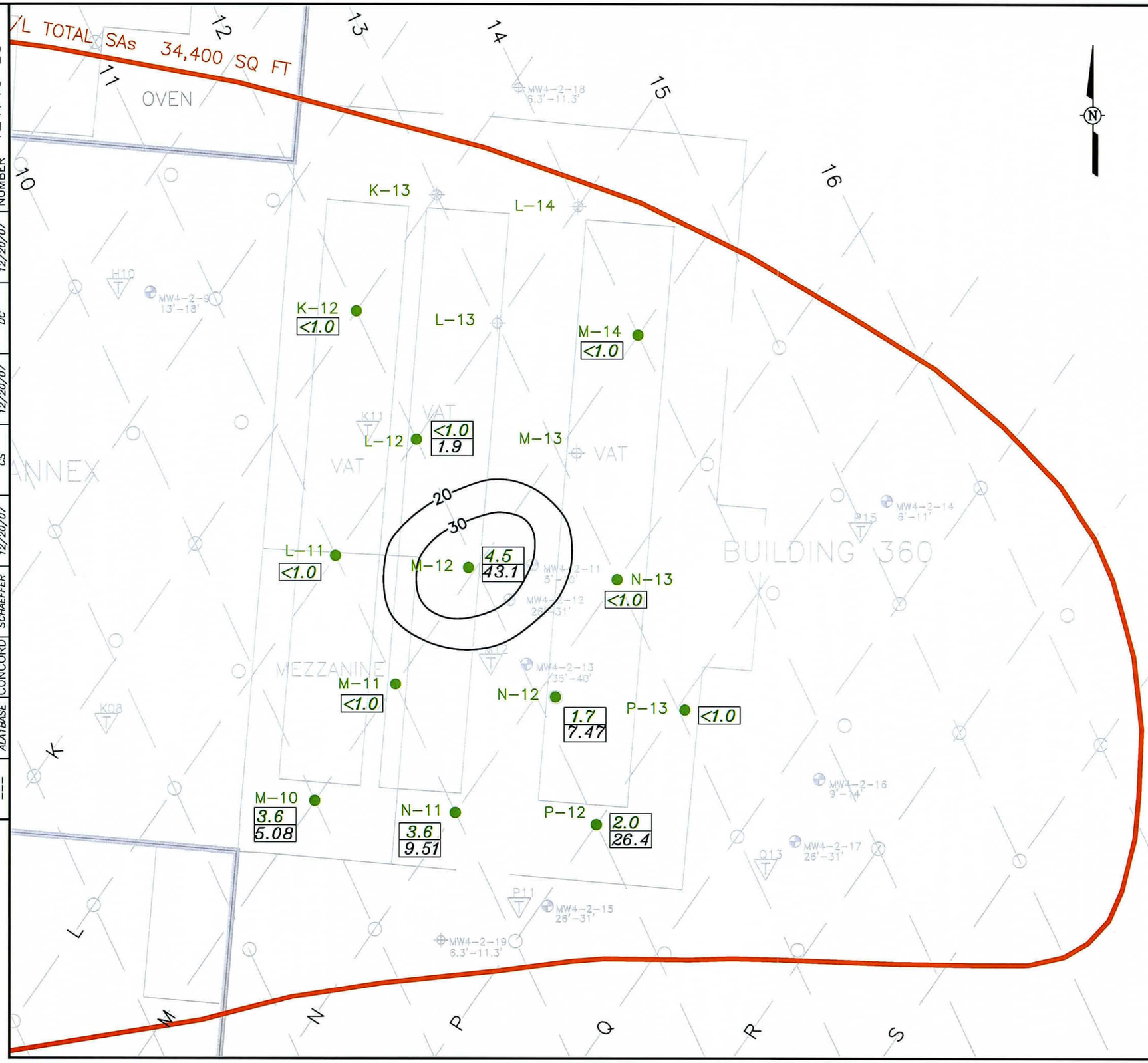
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
SAN DIEGO, CALIFORNIA

FIGURE 4

PLUME 4-2 TREATMENT SYSTEM
GRID AND EQUIPMENT LAYOUT

ALAMEDA POINT
ALAMEDA, CALIFORNIA

IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
---	ALA1BASE	CONCORD	SCHAEFFER 12/20/07	CS 12/20/07	DC 12/20/07	124716-B8



LEGEND

- ELECTRODE AND VAPOR RECOVERY WELL
- GRID ID — TEMPERATURE MONITORING POINT
- GRID ID XX'-XX' (SCREEN INTERVAL) MONITORING WELL
- LOCATION FOR SOIL SAMPLING PERFORMED IN AUGUST 2006
- <1.0 / 1.9 — FIELD SCREENING SAMPLE RESULT (mg/kg) / LABORATORY SAMPLE RESULT (mg/kg)
- BGS — BELOW GROUND SURFACE
- mg/kg — UNITS ARE IN MILLIGRAMS PER KILOGRAM
- <0.1 — NON DETECT (SCREENING SAMPLE)
- 20 — SOIL ISOCONCENTRATION CONTOUR BASED ON LABORATORY RESULTS

NOTES:

SOIL SAMPLES WERE FIRST SCREENED FOR HEXAVALENT CHROMIUM. BASED ON THE SCREENING RESULTS, SAMPLES WERE THEN SUBMITTED FOR LABORATORY ANALYSIS. THEREFORE, NOT ALL LOCATIONS HAVE LABORATORY ANALYTICAL RESULTS FOR HEXAVALENT CHROMIUM.

SOIL TO 5 FEET BGS HAD BEEN REMOVED AS PART OF BOREHOLE CLEARANCE AT K-13, L-13, L-14 AND M-13, BEFORE THE SAMPLING EVENT. THEREFORE, NO VADOSE ZONE SOIL SAMPLES WERE OBTAINED FROM THESE LOCATIONS.

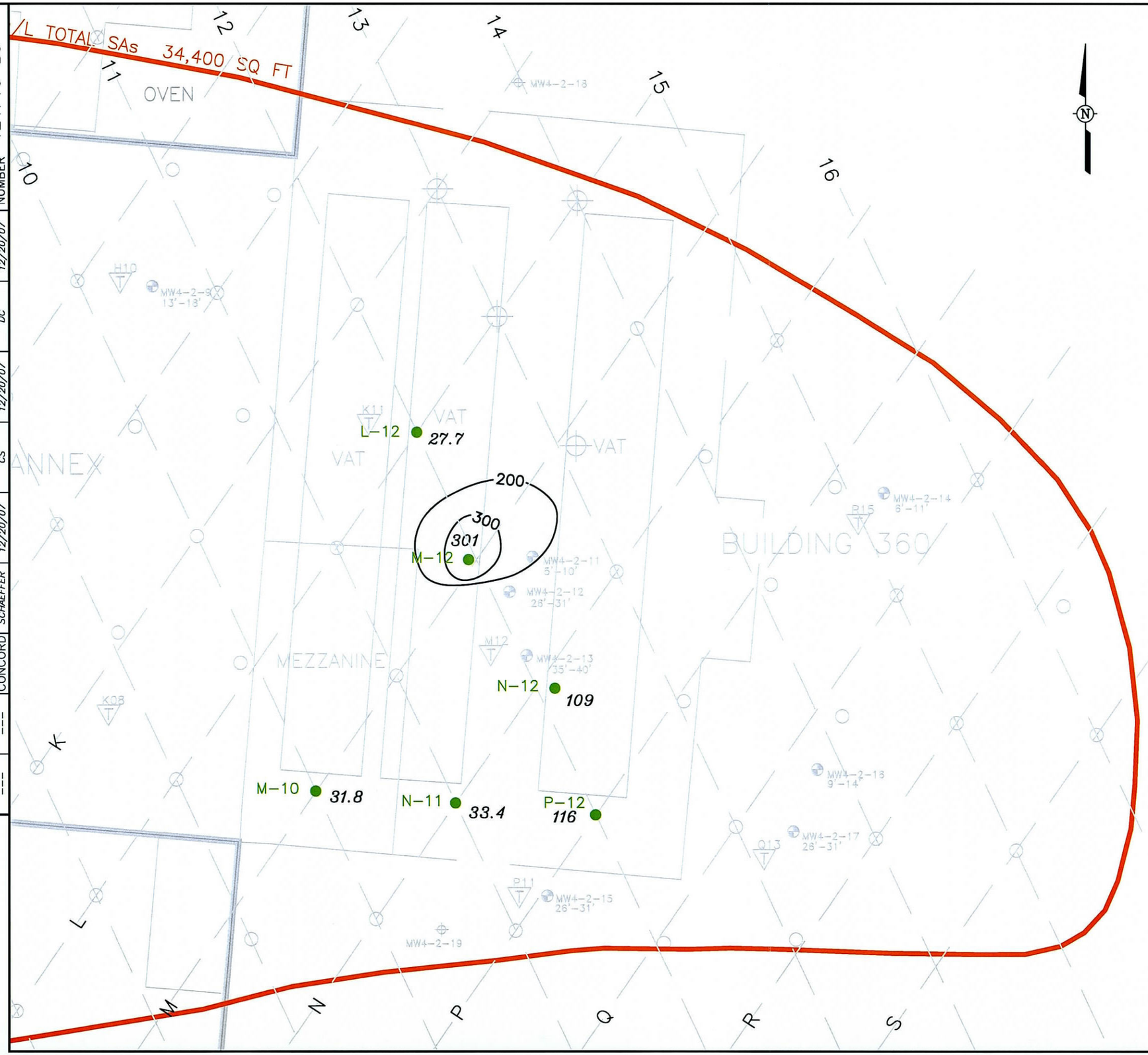
SCALE
0 15 30 FEET

Shaw® Shaw Environmental, Inc.

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
SAN DIEGO, CALIFORNIA

FIGURE 5
HEXAVALENT CHROMIUM IN SOIL
5 FEET BGS
IR SITE 4, PLUME 4-2
ALAMEDA POINT
ALAMEDA, CALIFORNIA

IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
---	---	CONCORD	SCHAEFFER 12/20/07	CS 12/20/07	DC 12/20/07	124716-B9



LEGEND

- ELECTRODE AND VAPOR RECOVERY WELL
- GRID ID — TEMPERATURE MONITORING POINT
- GRID ID XX'-XX' (SCREEN INTERVAL) MONITORING WELL
- L-12 ● — LOCATION WHERE SOIL SAMPLE WAS COLLECTED FOR CHROMIUM ANALYSIS IN AUGUST 2006
- BGS — BELOW GROUND SURFACE
- *301* — LABORATORY SAMPLE RESULT (mg/kg)
- mg/kg — UNITS ARE IN MILLIGRAMS PER KILOGRAM
- 200 — SOIL ISOCONCENTRATION CONTOUR BASED ON LABORATORY SAMPLE ANALYTICAL RESULTS

NOTE:
SOIL TO 5 FEET BGS HAD BEEN REMOVED AS PART OF BOREHOLE CLEARANCE AT K-13, L-13, L-14 AND M-13, BEFORE THE SAMPLING EVENT. THEREFORE, NO VADOSE ZONE SOIL SAMPLES WERE OBTAINED FROM THESE LOCATIONS.

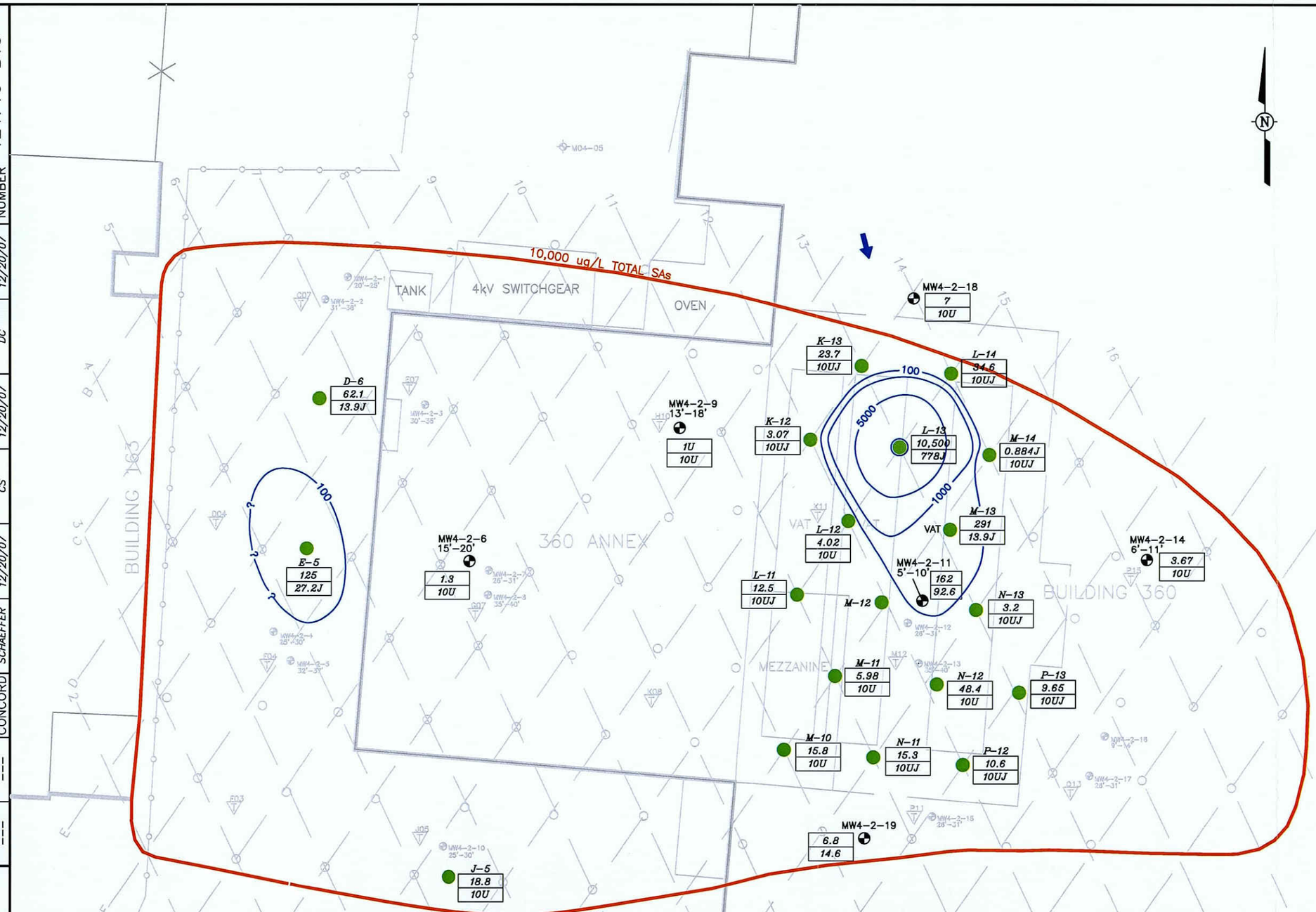
SCALE
0 15 30 FEET

Shaw® Shaw Environmental, Inc.

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
SAN DIEGO, CALIFORNIA

FIGURE 6
TOTAL CHROMIUM IN SOIL
5 FEET BGS
IR SITE 4, PLUME 4-2
ALAMEDA POINT
ALAMEDA, CALIFORNIA

IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
---	---	CONCORD	SCHAEFFER 12/20/07	CS 12/20/07	DC 12/20/07	124716-B10



LEGEND

- ELECTRODE AND VAPOR RECOVERY WELL
- GRID ID — TEMPERATURE MONITORING POINT
- MONITORING WELL GRID ID XX'-XX' (SCREEN INTERVAL)
- GROUNDWATER SAMPLE LOCATION – DIRECT PUSH COLLECTED IN AUGUST 2006
- µg/L — UNITS ARE IN MICROGRAMS PER LITER
- J — ESTIMATED RESULT
- U — NOT DETECT AT THE REPORTING LIMIT SHOWN
- J-5 / 6.8 / 14.6 — SAMPLE LOCATION; TOTAL CHROMIUM; HEXAVALENT CHROMIUM
- 100 — ISO-CONCENTRATION CONTOUR OF TOTAL CHROMIUM
- LOCALIZED GROUNDWATER FLOW DIRECTION IN THE SHALLOW WATER-BEARING ZONE BENEATH BLDG. 360 (BASED ON 2001 DESIGN DATA INVESTIGATION RESULTS)

NOTES:

1. DIRECT-PUSH (HYDROPUNCH) GROUNDWATER SAMPLES WERE TAKEN BETWEEN 5 FEET AND 10 FEET BELOW GROUND SURFACE.
2. NO GROUNDWATER SAMPLE WAS TAKEN AT M-12. THE SAMPLE FROM MW4-2-11 WAS USED TO ASSESS CHROMIUM LEVEL IN THAT AREA INSTEAD.

SCALE

0 25 50 FEET

Shaw® Shaw Environmental, Inc.

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
SAN DIEGO, CALIFORNIA

FIGURE 7
CHROMIUM ISOCONCENTRATIONS IN GROUNDWATER IR SITE 4, PLUME 4-2

ALAMEDA POINT
ALAMEDA, CALIFORNIA

DRAWING NUMBER	124716-B11
APPROVED BY	DC 12/21/07
CHECKED BY	CS 12/21/07
DRAWN BY	SCHAEFFER 12/21/07
OFFICE	CONCORD
X-REF	---
IMAGE	---

Location	MW4-2-2
Sampling Date	Total SA Concentration (µg/L)
8/30/2006	43,626
12/11/2006	15,290
1/22/2007	6,070
2/13/2007	3,732
3/19/2007	1,721
5/16/2007	587

Location	MW4-2-1
Sampling Date	Total SA Concentration (µg/L)
8/30/2006	13,173
12/11/2006	17,025
1/22/2007	11,590
2/13/2007	10,461
3/19/2007	5,491
5/16/2007	1,699
7/11/2007	73

Location	MW4-2-9
Sampling Date	Total SA Concentration (µg/L)
8/29/2006	23,064
12/12/2006	10,126
1/23/2007	21,162
2/14/2007	20,180
3/20/2007	756
5/15/2007	81

Location	MW4-2-12
Sampling Date	Total SA Concentration (µg/L)
8/29/2006	74,603
12/12/2006	66,556
1/23/2007	341
2/14/2007	220
3/20/2007	439
5/15/2007	417

Location	MW4-2-18
Sampling Date	Total SA Concentration (µg/L)
5/15/2007	603

Location	MW4-2-13
Sampling Date	Total SA Concentration (µg/L)
8/29/2006	392,803
12/12/2006	159,831
1/23/2007	10,461
2/14/2007	6,071
3/20/2007	6,016
5/15/2007	7,750
7/11/2007	1,030

Location	MW4-2-11
Sampling Date	Total SA Concentration (µg/L)
8/29/2006	69,473
12/12/2006	73,711
1/23/2007	4,030
2/14/2007	6,358
3/20/2007	3,272
5/15/2007	1,756

Location	MW4-2-14
Sampling Date	Total SA Concentration (µg/L)
8/28/2006	14,402
12/13/2006	24,126
1/24/2007	23,297
2/15/2007	24,457
3/20/2007	26,843
5/15/2007	8,035
7/11/2007	144

Location	MW4-2-3
Sampling Date	Total SA Concentration (µg/L)
8/30/2006	82,396
12/11/2006	35,097
1/22/2007	50,596
2/13/2007	36,225
3/19/2007	15,200
4/10/2007	626
5/16/2007	400

Location	MW4-2-8
Sampling Date	Total SA Concentration (µg/L)
8/29/2006	29,946
12/12/2006	40,685
1/22/2007	7,798
2/13/2007	545
3/20/2007	101
5/16/2007	190

Location	MW4-2-7
Sampling Date	Total SA Concentration (µg/L)
8/29/2006	55,277
12/11/2006	30,439
1/22/2007	2,649
2/13/2007	706
3/19/2007	311
5/16/2007	140

Location	MW4-2-6
Sampling Date	Total SA Concentration (µg/L)
8/29/2006	42,797
12/12/2006	32,900
1/23/2007	46,990
2/14/2007	27,804
3/19/2007	627
5/17/2007	64

Location	MW4-2-4
Sampling Date	Total SA Concentration (µg/L)
8/30/2006	35,390
12/11/2006	14,678
1/22/2007	32,743
2/13/2007	10,050
3/19/2007	311
5/17/2007	155

Location	MW4-2-5
Sampling Date	Total SA Concentration (µg/L)
8/30/2006	12,368
12/11/2006	26,717
1/22/2007	12,257
2/13/2007	9,779
3/19/2007	2,673
5/16/2007	4,732
7/11/2007	731

Location	MW4-2-10
Sampling Date	Total SA Concentration (µg/L)
8/30/2006	17,593
12/11/2006	16,465
1/22/2007	4,855
2/13/2007	1,473
3/19/2007	4,014
5/17/2007	531

Location	MW4-2-19
Sampling Date	Total SA Concentration (µg/L)
5/15/2007	34,017
7/11/2007	1,395

Location	MW4-2-15
Sampling Date	Total SA Concentration (µg/L)
8/29/2006	7,959
12/13/2006	17,235
1/24/2007	10,061
2/14/2007	10,060
3/19/2007	3,238
5/15/2007	5,045
7/11/2007	835

Location	MW4-2-17
Sampling Date	Total SA Concentration (µg/L)
8/28/2006	2,500
12/13/2006	686
1/24/2007	1,235
2/15/2007	1,622
3/19/2007	801
5/15/2007	1,104

Location	MW4-2-16
Sampling Date	Total SA Concentration (µg/L)
8/28/2006	33,503
12/12/2006	52,122
1/24/2007	62,201
2/15/2007	45,012
3/20/2007	17,941
4/10/2007	855
5/15/2007	646

MW4-2-1 20'-25'
MW4-2-2 31'-36'
MW4-2-3 30'-35'
MW4-2-4 25'-30'
MW4-2-5 32'-37'
MW4-2-6 15'-20'
MW4-2-7 26'-31'
MW4-2-8 35'-40'
MW4-2-9 13'-18'
MW4-2-10 25'-30'
MW4-2-11 5'-10'
MW4-2-12 26'-31'
MW4-2-13 35'-40'
MW4-2-14 6'-11'
MW4-2-15 26'-31'
MW4-2-16 9'-14'
MW4-2-17 26'-31'
MW4-2-18 6'-11'
MW4-2-19 6'-11'
MW360-2

REGION 1 5' TO 40' BGS
REGION 2 5' TO 29' BGS
REGION 3 5' TO 18' BGS
REGION 4 5' TO 44' BGS
REGION 5 5' TO 35' BGS

TANK
4kV SWITCHGEAR
OVEN
360 ANNEX
BUILDING 163
BUILDING 360
MEZZANINE
VAT

LEGEND

- ELECTRODE AND VAPOR RECOVERY WELL
- GRID ID — TEMPERATURE MONITORING POINT
- MONITORING WELL XX'-XX' (SCREEN INTERVAL WHERE SPECIFIED)
- ELECTRODE NOT INSTALLED DUE TO SITE CONDITIONS
- TREATMENT AREA BOUNDARY
- FENCE
- SA — SCREENING ANALYTES CONSISTING OF CHLORINATED VOLATILE ORGANIC COMPOUNDS, PREDOMINANTLY 1,1-DICHLOROETHENE (REFER TO TABLE 3 FOR A COMPLETE LIST OF THE COMPOUNDS)
- µg/L — MICROGRAMS PER LITER
- SA CONCENTRATION EQUAL TO OR GREATER THAN 10,000 µg/L
- SA CONCENTRATION LESS THAN 10,000 µg/L

NOTE:
ONLY SELECT MONITORING WELLS WERE SAMPLED IN JULY 2007. THEREFORE, NOT ALL WELLS REPORTED JULY SAMPLING RESULTS.

MW4-2-18 AND MW4-2-19 WERE NOT SAMPLED FOR SA MONITORING UNTIL MAY 2007. AS SUCH, DATA FOR THESE TWO WELLS ARE SHOWN ONLY FROM MAY 2007 ON.

SCALE
0 25 50 FEET

SOURCE:
ELECTRODE AND EQUIPMENT LAYOUTS ARE BASED ON AS-BUILT PLOT PLAN DEVELOPED BY THERMAL REMEDIATION SERVICES.

Shaw® Shaw Environmental, Inc.

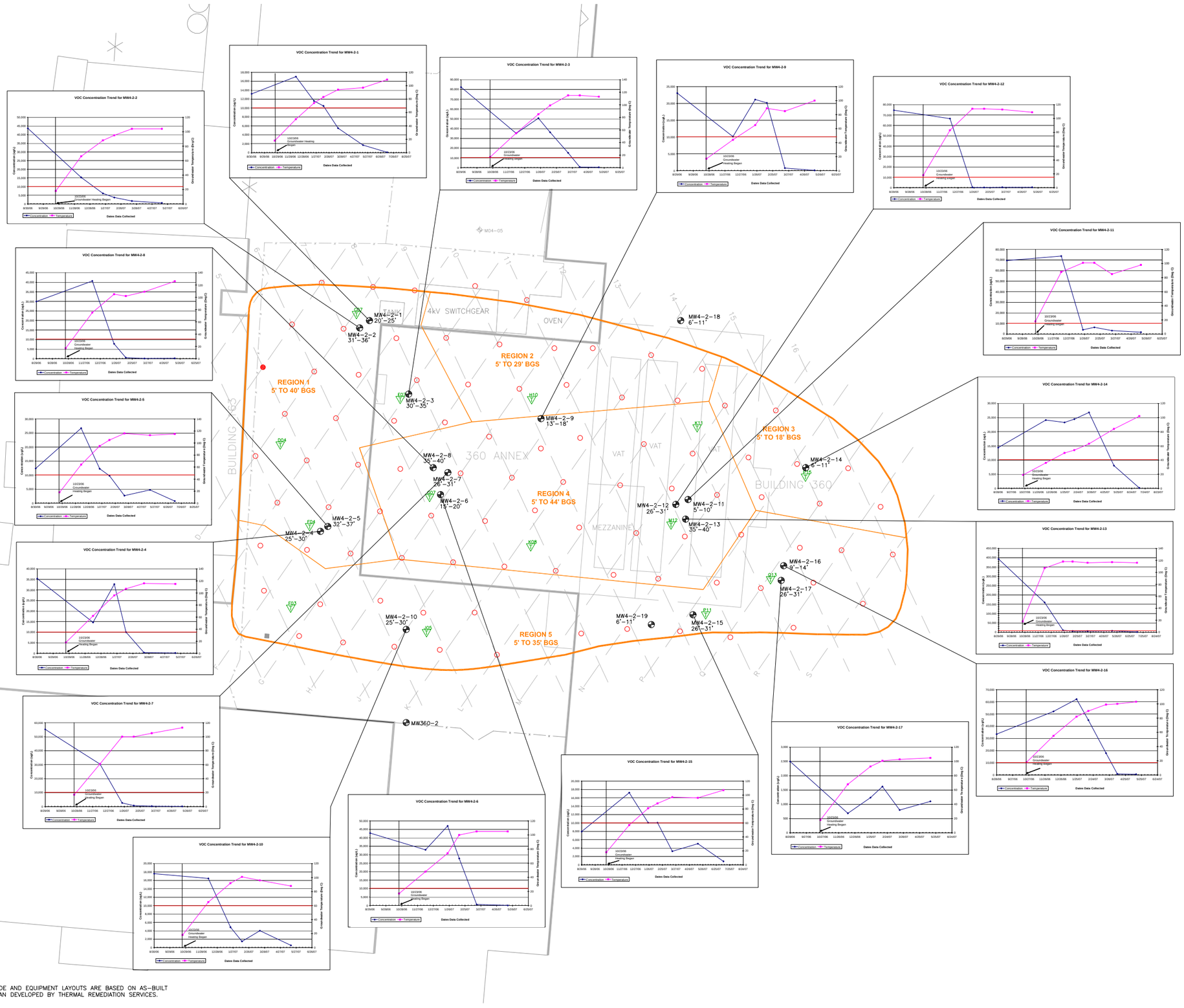
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
SAN DIEGO, CALIFORNIA

FIGURE 8

PLUME 4-2 BASELINE AND PROGRESS TREATMENT SAMPLING RESULTS

ALAMEDA POINT
ALAMEDA, CALIFORNIA

IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
---	ALA1BASE	CONC	B. Jensen	CS 11/13/07	DC 11/13/07	124716-D5



SOURCE:
ELECTRODE AND EQUIPMENT LAYOUTS ARE BASED ON AS-BUILT PLOT PLAN DEVELOPED BY THERMAL REMEDIATION SERVICES.

N

LEGEND

- ELECTRODE AND VAPOR RECOVERY WELL
- GRID ID — TEMPERATURE MONITORING POINT
- MONITORING WELL XX'-XX' (SCREEN INTERVAL WHERE SPECIFIED)
- ELECTRODE NOT INSTALLED DUE TO SITE CONDITIONS
- TREATMENT AREA BOUNDARY
- FENCE
- SA — SCREENING ANALYTES CONSISTING OF CHLORINATED VOLATILE ORGANIC COMPOUNDS, PREDOMINANTLY 1,1-DICHLOROETHENE
- µg/L — MICROGRAMS PER LITER

NOTE:
MW4-2-18 AND MW4-2-19 WERE SAMPLED ONCE DURING GROUNDWATER TREATMENT. THEREFORE, NO GRAPHICAL DATA ARE PRESENTED HEREIN FOR THE TWO WELLS.

SCALE
0 20 40 FEET

Shaw Environmental, Inc.

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION SAN DIEGO, CALIFORNIA

FIGURE 9

WELL SA CONCENTRATION CHANGES FROM BASELINE THROUGH TREATMENT

ALAMEDA POINT
ALAMEDA, CALIFORNIA

IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
---	---	CONCORD	SCHAEFFER 12/20/07	CS 12/20/07	DC 12/20/07	124716-B12

DATE	CHROMIUM µg/L	HEXAVALENT CHROMIUM µg/L
8/29/06	<1	<10
12/12/06	0.7J	<10
1/23/07	0.6J	<10
2/14/07	0.8J	<10
10/23/07	<1	<10

DATE	CHROMIUM µg/L	HEXAVALENT CHROMIUM µg/L
8/29/06	7.0	<10
12/12/06	1.3	<10
1/23/07	2.1	<10
2/14/07	1.7	<10
10/23/07	3.1	<10

DATE	CHROMIUM µg/L	HEXAVALENT CHROMIUM µg/L
8/29/06	162	92.6
12/12/06	2.8	<10
1/23/07	77.7	<10
2/14/07	44.5	<10
10/23/07	13.1	<10

DATE	CHROMIUM µg/L	HEXAVALENT CHROMIUM µg/L
12/12/06	7,700	<10
1/23/07	428	<10
2/14/07	201	<10
10/23/07	17.7	<10

DATE	CHROMIUM µg/L	HEXAVALENT CHROMIUM µg/L
8/29/06	1.3	<10
12/12/06	<1	<10
1/23/07	1.2	<10
2/14/07	1.0	<10
10/23/07	<1	<10

DATE	CHROMIUM µg/L	HEXAVALENT CHROMIUM µg/L
8/29/06	6.8	14.6
12/12/06	0.9J	<10
1/23/07	4.2	<10
2/14/07	1.7	<10
10/23/07	9.0	<10

LEGEND

- ELECTRODE AND VAPOR RECOVERY WELL
- GRID ID TEMPERATURE MONITORING POINT
- MONITORING WELL XX'–XX' (SCREEN INTERVAL WHERE SPECIFIED)
- ELECTRODE NOT INSTALLED DUE TO SITE CONDITIONS
- TREATMENT AREA BOUNDARY
- FENCE
- µg/L MICROGRAMS PER LITER
- 0.7J REPORTED CONCENTRATION VALUE IS ESTIMATED
- <10 NOT DETECTED AT THE DETECTION LIMIT
- LOCALIZED GROUNDWATER FLOW DIRECTION IN THE SHALLOW WATER-BEARING ZONE BENEATH BLDG. 360 (BASED ON 2001 DESIGN DATA INVESTIGATION RESULTS)

NOTE:
SAMPLE RESULTS FROM AUGUST 2006 REPRESENT BASELINE CONDITIONS. SAMPLE RESULTS FROM OCTOBER 2007 REPRESENT POST-TREATMENT CONDITIONS. SAMPLE RESULTS IN BETWEEN REPRESENT CONDITIONS DURING TREATMENT TO REMOVE CHLORINATED VOLATILE ORGANIC COMPOUNDS.

SOURCE:
ELECTRODE AND EQUIPMENT LAYOUTS ARE BASED ON AS-BUILT PLOT PLAN DEVELOPED BY THERMAL REMEDIATION SERVICES.

SCALE
0 25 50 FEET

Shaw® Shaw Environmental, Inc.

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
SAN DIEGO, CALIFORNIA

FIGURE 10
PLUME 4-2
CHROMIUM CONCENTRATION
CHANGES IN GROUNDWATER DURING
AND AFTER IN-SITU TREATMENT
ALAMEDA POINT
ALAMEDA, CALIFORNIA

Figure 11. Cumulative VOC Mass Recovery and Temperature Plots Versus Hours of Operation During In-Situ Groundwater Treatment at Plume 4-2, Bulding 360, Alameda Point, Alameda, California

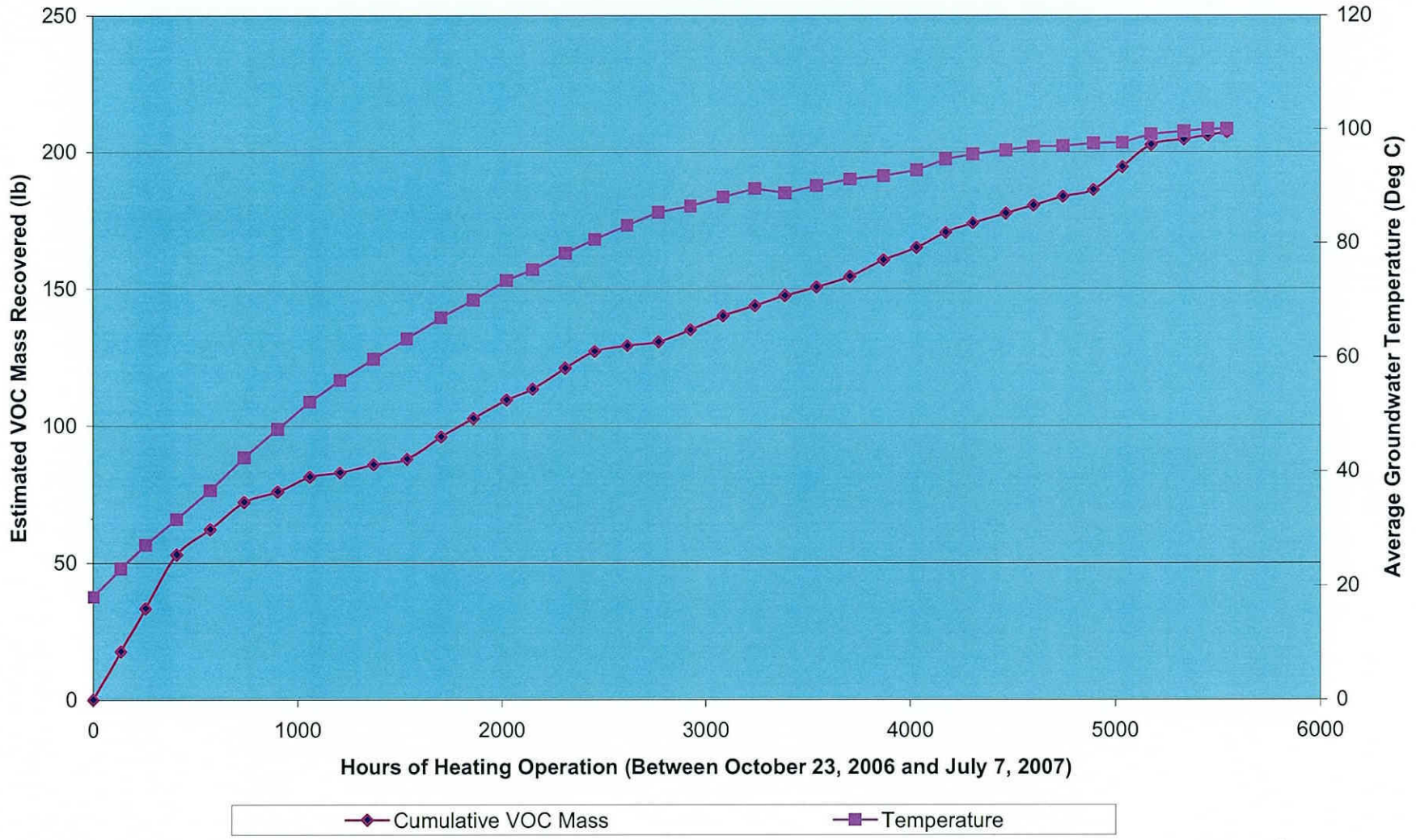
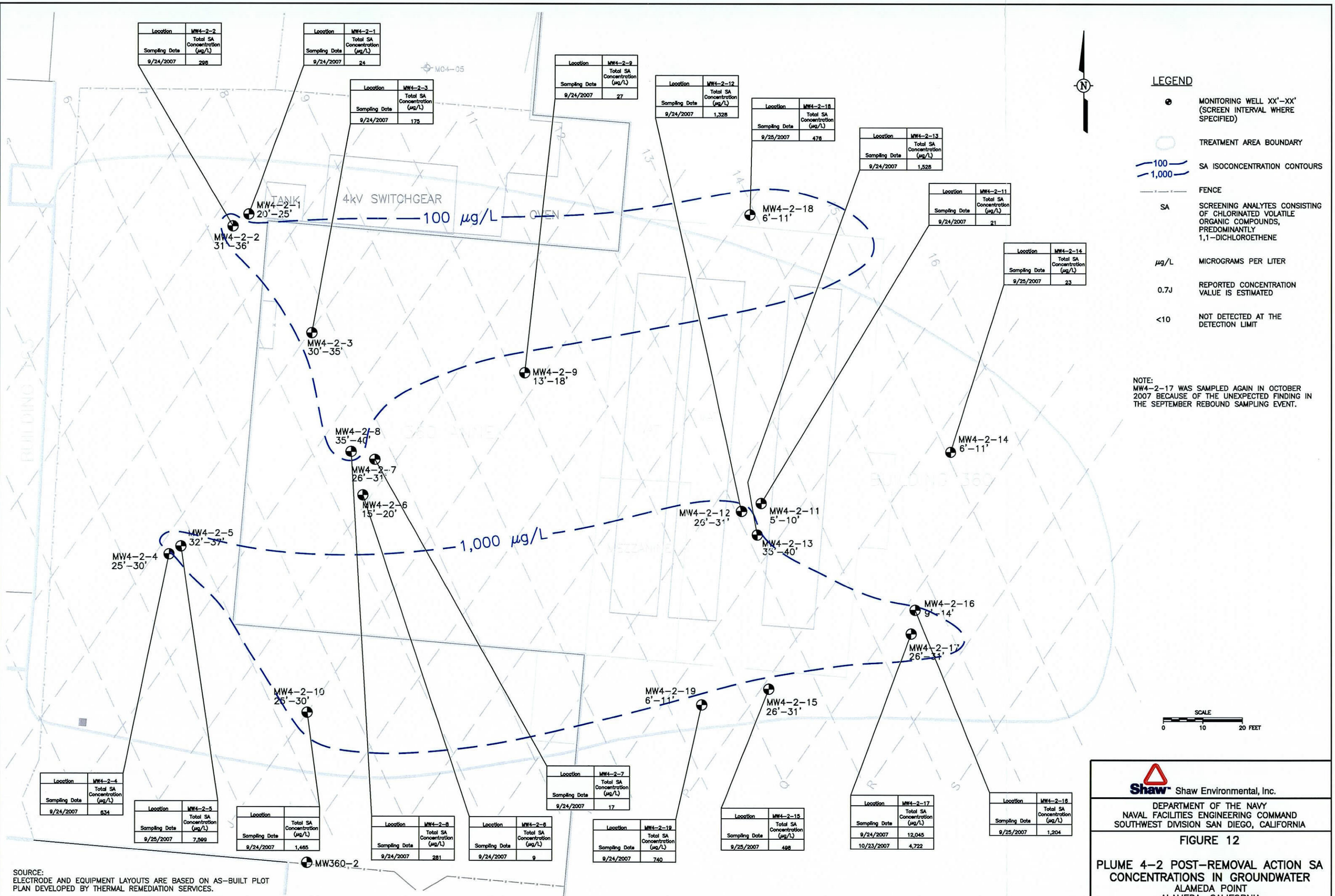


IMAGE	X-REF	OFFICE	DRAWING NUMBER
---	ALA1BASE	CONCORD	1...716-D6

	APPROVED BY	CHECKED BY	DRAWN BY
	DC	CS	B. JENSEN
	11/13/07	11/13/07	11/13/07



Location	MW4-2-2
Sampling Date	Total SA Concentration (µg/L)
9/24/2007	298

Location	MW4-2-1
Sampling Date	Total SA Concentration (µg/L)
9/24/2007	24

Location	MW4-2-3
Sampling Date	Total SA Concentration (µg/L)
9/24/2007	175

Location	MW4-2-9
Sampling Date	Total SA Concentration (µg/L)
9/24/2007	27

Location	MW4-2-12
Sampling Date	Total SA Concentration (µg/L)
9/24/2007	1,328

Location	MW4-2-18
Sampling Date	Total SA Concentration (µg/L)
9/25/2007	476

Location	MW4-2-13
Sampling Date	Total SA Concentration (µg/L)
9/24/2007	1,528

Location	MW4-2-11
Sampling Date	Total SA Concentration (µg/L)
9/24/2007	21

Location	MW4-2-14
Sampling Date	Total SA Concentration (µg/L)
9/25/2007	23

Location	MW4-2-4
Sampling Date	Total SA Concentration (µg/L)
9/24/2007	634

Location	MW4-2-5
Sampling Date	Total SA Concentration (µg/L)
9/25/2007	7,599

Location	
Sampling Date	Total SA Concentration (µg/L)
9/24/2007	1,465

Location	MW4-2-8
Sampling Date	Total SA Concentration (µg/L)
9/24/2007	281

Location	MW4-2-6
Sampling Date	Total SA Concentration (µg/L)
9/24/2007	9

Location	MW4-2-7
Sampling Date	Total SA Concentration (µg/L)
9/24/2007	17

Location	MW4-2-19
Sampling Date	Total SA Concentration (µg/L)
9/24/2007	740

Location	MW4-2-15
Sampling Date	Total SA Concentration (µg/L)
9/25/2007	498

Location	MW4-2-17
Sampling Date	Total SA Concentration (µg/L)
9/24/2007	12,045
10/23/2007	4,722

Location	MW4-2-16
Sampling Date	Total SA Concentration (µg/L)
9/25/2007	1,204

LEGEND

◒	MONITORING WELL XX'-XX' (SCREEN INTERVAL WHERE SPECIFIED)
	TREATMENT AREA BOUNDARY
100 / 1,000	SA ISOCONCENTRATION CONTOURS
	FENCE
SA	SCREENING ANALYTES CONSISTING OF CHLORINATED VOLATILE ORGANIC COMPOUNDS, PREDOMINANTLY 1,1-DICHLOROETHENE
µg/L	MICROGRAMS PER LITER
0.7J	REPORTED CONCENTRATION VALUE IS ESTIMATED
<10	NOT DETECTED AT THE DETECTION LIMIT

NOTE:
MW4-2-17 WAS SAMPLED AGAIN IN OCTOBER 2007 BECAUSE OF THE UNEXPECTED FINDING IN THE SEPTEMBER REBOUND SAMPLING EVENT.

SCALE
0 10 20 FEET

SOURCE:
ELECTRODE AND EQUIPMENT LAYOUTS ARE BASED ON AS-BUILT PLOT PLAN DEVELOPED BY THERMAL REMEDIATION SERVICES.

Shaw Environmental, Inc.

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION SAN DIEGO, CALIFORNIA

FIGURE 12

PLUME 4-2 POST-REMOVAL ACTION SA CONCENTRATIONS IN GROUNDWATER

ALAMEDA POINT
ALAMEDA, CALIFORNIA

Tables

Table 1

Summary of Additional System Design Investigation Soil Sample Results

Sample Location		Alameda	K12-0		K12-3		L12-0		L12-3		L12-5		M10-0		M10-3		M10-5		M11-0		M11-3		M12-0		M12-5		N11-0	
Sample Depth (feet bgs)		Background	0		3		0		3		5		0		3		5		0		3		0		5		0	
Date Collected		Concentration	8/28/2006		8/15/2006		8/28/2006		8/15/2006		8/15/2006		8/28/2006		8/15/2006		8/15/2006		8/28/2006		8/15/2006		8/28/2006		8/16/2006		8/28/2006	
Parameter	Units		Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Metals (EPA 6020/7471A)																												
Antimony	mg/kg	2.7	10.7	U	12	UJ	11	U	10.8	UJ	11.1	UJ	11.1	U	11	UJ	11.8	UJ	10.8	U	10.8	U	10.4	U	11.5	U	10.4	J
Arsenic	mg/kg	3.1	1.91		1.2	U	1.51	U	1.13	U	1.42		4.6		1.28		1.37		1.77	U	1.5		1.22	U	2.43		1.43	U
Barium	mg/kg	47.4	33		30.7		39.1		34.1		84.9		49.2		15		45.6		50.2		40.9		139		88.6		53.1	
Beryllium	mg/kg	0.6	0.22	J	0.602	U	0.316	J	0.539	U	0.554	U	0.314	J	0.549	U	0.588	U	0.308	J	0.217	J	0.214	J	0.246	J	0.405	J
Cadmium	mg/kg	0.42	0.536	U	0.602	U	0.549	U	0.539	U	0.554	U	2.65		0.549	U	0.588	U	0.542	U	0.538	U	0.521	U	34.6		0.558	U
Chromium	mg/kg	33.1	29.1		29.9		21.2		24.5		27.7		124		36.4		31.8		34.9		45.5		73.2		301		1180	
Cobalt	mg/kg	7.9	4.61	J	3.34	J	4.21	J	4.6	J	3.91	J	17.7		3.02	J	3.91	J	6.09		4.99	J	5.04	J	14.7		7.13	
Copper	mg/kg	10.5	7.64		6.93		7.19		5.89		6.13		24.8		4.97	J	6.7		8.73		7.13		39.4		177		13.5	
Hexavalent Chromium	mg/kg	30 (PRG)	0.6		1.37		0.439	U	1.19		1.9		74		9		5.08		3.08		6.82		8.82		43.1		905	
Lead	mg/kg	9.9	4.19		1.72		4.27		4.26		3.93		26.6		3.9		3.14		7.89		5.05		5.76		56.6		10.1	
Mercury	mg/kg	0.12	0.215	U	0.241	U	0.22	U	0.216	U	0.221	U	0.138	J	0.22	U	0.235	U	0.217	U	0.215	U	0.208	U	0.231	U	0.223	U
Molybdenum	mg/kg	--	5.36	U	6.02	U	5.49	U	5.39	U	5.54	U	5.55	U	5.49	U	5.88	U	5.42	U	5.38	U	5.21	U	5.77	U	5.58	U
Nickel	mg/kg	30.1	23.8	J	21.9	J	22.9	J	20.8	J	19.6	J	87.1	J	19.5	J	18.5	J	28.6	J	22.7	J	413	J	431	J	33.9	J
Selenium	mg/kg	--	2.92		1.86		2.65		2.48		2.44		6.49		1.98		2.77		3.36		2.41		2.91		4.78		3.58	
Silver	mg/kg	0.58	5.36	U	6.02	U	5.49	U	5.39	U	5.54	U	5.55	U	5.49	U	5.88	U	5.42	U	5.38	U	7.87		25.7		7.32	
Thallium	mg/kg	--	1.07	U	1.2	U	1.1	U	1.08	U	1.11	U	1.11	U	1.1	U	1.18	U	1.08	U	1.08	U	1.04	U	1.15	U	1.12	U
Vanadium	mg/kg	25.1	19.6		14.5		17		16.4		17.3		24.1		14		17.7		22.5		18.8		18.3		23		25.3	
Zinc	mg/kg	29.2	19		12.5		19.1		17.4		16.7		80		14.8		15.7		24.6		23.2		23.9		52.9		34	
General Chemistry																												
Carbon, Total Organic	mg/kg	--	NA		NA		NA		13400		2690		NA		1100	U	1180	U	NA		NA		NA		1150	U	NA	
Cyanide, Total	mg/kg	--	NA		NA		NA		1.08	U	1.11	U	NA		1.1	U	1.18	U	NA		NA		NA		NA		NA	
Volatile Organic Compounds (EPA 5035/8260B)																												
1,1,1,2-Tetrachloroethane	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
1,1,1-Trichloroethane	µg/kg	--	2.7	J	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	12		4.7	U	220	J	4.6	J
1,1,2,2-Tetrachloroethane	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
1,1,2-Trichloroethane	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	4.9	J	5.1	U
1,1-Dichloroethane	µg/kg	--	4.8	U	5.2	U	5.2	U	5	J	2.3	J	5.2	U	5	U	5	U	4.4	U	1.9	J	4.7	U	71	J	5.1	U
1,1-Dichloroethene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	51	J	5.1	U
1,1-Dichloropropene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
1,2,3-Trichlorobenzene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
1,2,3-Trichloropropane	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
1,2,4-Trichlorobenzene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
1,2,4-Trimethylbenzene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
1,2-Dibromo-3-Chloropropane	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
1,2-Dibromoethane	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
1,2-Dichlorobenzene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
1,2-Dichloroethane	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	UJ	5	UJ	4.4	U	4.6	UJ	4.7	U	5.1	U	5.1	U
1,2-Dichloropropane	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
1,3,5-Trimethylbenzene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
1,3-Dichlorobenzene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
1,3-Dichloropropane	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
1,4-Dichlorobenzene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
2,2-Dichloropropane	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
2-Butanone	µg/kg	--	11		10	U	10	U	8.1	J	9.9	U	11		10	UJ	10	UJ	13		9.3	UJ	10		8.3	J	27	
2-Chlorotoluene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
2-Hexanone	µg/kg	--	48	U	52	U	52	U	48	U	49	U	30	J	50	UJ	50	UJ	44	U	46	UJ	47	U	51	U	16	J
4-Chlorotoluene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
4-Isopropyltoluene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
4-Methyl-2-Pentanone	µg/kg	--	9.5	U	10	U	10	U	9.6	U	9.9	U	10	U	10	UJ	10	UJ	8.8	U	9.3	UJ	9.5	U	10	U	10	U
Acetone	µg/kg	--	43		10	U	15		37	J	11		39		8.4	J	16		64		17		53		53	J	170	
Benzene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
Benzene, Propyl-	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
Bromobenzene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
Bromochloromethane	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
Bromodichloromethane	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
Bromoform	µg/kg	--	9.5	U	10	U	10	U	9.6	UJ	9.9	U	10	U	10	U	10	U	8.8	U	9.3	UJ	9.5	U	10	UJ	10	U
Bromomethane	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U

Table 1
Summary of Additional System Design Investigation Soil Sample Results

Sample Location		Alameda	K12-0		K12-3		L12-0		L12-3		L12-5		M10-0		M10-3		M10-5		M11-0		M11-3		M12-0		M12-5		N11-0	
Sample Depth (feet bgs)		Background	0		3		0		3		5		0		3		5		0		3		0		5		0	
Date Collected		Concentration	8/28/2006		8/15/2006		8/28/2006		8/15/2006		8/15/2006		8/28/2006		8/15/2006		8/15/2006		8/28/2006		8/15/2006		8/28/2006		8/16/2006		8/28/2006	
Parameter	Units		Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Carbon Tetrachloride	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
Chlorobenzene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
Chlorodibromomethane	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
Chloroethane	µg/kg	--	9.5	U	10	U	10	U	9.6	U	9.9	U	10	U	10	U	10	U	8.8	U	9.3	U	9.5	U	10	U	10	U
Chloroform	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
Chloromethane	µg/kg	--	9.5	U	10	U	10	U	9.6	U	9.9	U	10	U	10	U	10	U	8.8	U	9.3	U	9.5	U	10	U	10	U
Cis-1,2-Dichloroethene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
Dibromomethane	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
Dichlorodifluoromethane	µg/kg	--	9.5	U	10	U	10	U	9.6	U	9.9	U	10	U	10	U	10	U	8.8	U	9.3	U	9.5	U	10	U	10	U
Ethylbenzene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
Hexachlorobutadiene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
Isopropylbenzene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
M,P-Xylene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
Methyl Tert-Butyl Ether	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
Methylene Chloride	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
N-Butylbenzene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
Naphthalene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
O-Xylene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
Sec-Butylbenzene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
Styrene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
T-Butyl Alcohol (Tba)	µg/kg	--	19	U	21	U	21	U	19	U	20	U	21	U	20	UJ	20	UJ	18	U	19	UJ	19	U	20	U	20	U
Tert-Butylbenzene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	UJ	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	UJ	4.7	U	5.1	UJ	5.1	U
Tetrachloroethene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
Toluene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
Trans-1,2-Dichloroethene	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	5.1	U
Trichloroethene	µg/kg	--	25		5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	U	5	U	4.4	U	4.6	U	4.7	U	5.1	U	7.3	
Trichlorofluoromethane	µg/kg	--	4.8	U	5.2	U	5.2	U	4.8	U	4.9	U	5.2	U	5	UJ	5	UJ	4.4	U	4.6	UJ	4.7	U	5.1	U	5.1	U
Vinyl Chloride	µg/kg	--	9.5	U	10	U	10	U	9.6	U	9.9	U	10	U	10	U	10	U	8.8	U	9.3	U	9.5	U	10	U	10	U

Table 1

Summary of Additional System Design Investigation Soil Sample Results

Sample Location		Alameda	N11-3		N11-5		N12-0		N12-3		N12-5		P12-0		P12-5	
Sample Depth (feet bgs)		Background	3		5		0		3		5		0		5	
Date Collected		Concentration	8/15/2006		8/15/2006		8/28/2006		8/16/2006		8/16/2006		8/28/2006		8/15/2006	
Parameter	Units		Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Metals (EPA 6020/7471A)																
Antimony	mg/kg	2.7	11.5	U	12.2	UJ	10.6	U	10.8	U	11.7	U	10.7	U	11.4	UJ
Arsenic	mg/kg	3.1	1.15	U	1.22	U	1.79	U	1.73		1.61		1.57	U	1.14	U
Barium	mg/kg	47.4	25.2		41.9		295		48.9		33.8		121		48.3	
Beryllium	mg/kg	0.6	0.576	U	0.608	U	0.243	J	0.539	U	0.585	U	0.305	J	0.572	U
Cadmium	mg/kg	0.42	0.576	U	0.608	U	0.531	U	10.5		2.33		0.535	U	0.732	U
Chromium	mg/kg	33.1	341		33.4		27.2		284		109		56.9		116	
Cobalt	mg/kg	7.9	3.7	J	3.13	J	5.06	J	15		9.53		7.57		6.48	
Copper	mg/kg	10.5	6.36		5.57	J	10.4		34.3		16		13.4		29.8	
Hexavalent Chromium	mg/kg	30 (PRG)	163		9.51		45.9		37.7		7.47		6.89		26.4	
Lead	mg/kg	9.9	5.15		2.48		7.24		35.8		13.8		6.52		16	
Mercury	mg/kg	0.12	0.0762	J	0.243	U	0.212	U	0.216	U	0.234	U	0.214	U	0.229	U
Molybdenum	mg/kg	--	5.76	U	6.08	U	5.31	U	5.39	U	5.85	U	5.35	U	5.72	U
Nickel	mg/kg	30.1	40.1	J	15.4	J	26.3	J	157	J	75.6	J	30.8	J	44.6	J
Selenium	mg/kg	--	2.44		2.2		3.06		4.73		4.15		2.93		2.34	
Silver	mg/kg	0.58	4	J	6.08	U	5.31	U	16.6		3.74	J	5.35	U	5.72	U
Thallium	mg/kg	--	1.15	U	1.22	U	1.06	U	1.08	U	1.17	U	1.07	U	1.14	U
Vanadium	mg/kg	25.1	17.7		16.5		23.3		19.1		19.4		20.9		18.5	
Zinc	mg/kg	29.2	19.1		13.7		28		36.4		28		22.6		26.6	
General Chemistry																
Carbon, Total Organic	mg/kg	--	1150	U	NA		NA		3970		NA		NA		3090	
Cyanide, Total	mg/kg	--	0.291	J	1.22	U	1.33		1.59		NA		NA		1.14	U
Volatile Organic Compounds (EPA 5035/8260B)																
1,1,1,2-Tetrachloroethane	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
1,1,1-Trichloroethane	µg/kg	--	20		200		37		700		9500		52000		26000	
1,1,2,2-Tetrachloroethane	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
1,1,2-Trichloroethane	µg/kg	--	5.1	U	5	U	5	U	5	U	15	J	4.9	U	4.9	U
1,1-Dichloroethane	µg/kg	--	17		120		5	U	11	J	170	J	73	J	280	J
1,1-Dichloroethene	µg/kg	--	20		560		4.1	J	18	J	240	J	98	J	180	J
1,1-Dichloropropene	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
1,2,3-Trichlorobenzene	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
1,2,3-Trichloropropane	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
1,2,4-Trichlorobenzene	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
1,2,4-Trimethylbenzene	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
1,2-Dibromo-3-Chloropropane	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
1,2-Dibromoethane	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
1,2-Dichlorobenzene	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	UJ	4.9	UJ	4.9	UJ
1,2-Dichloroethane	µg/kg	--	5.1	UJ	5	UJ	5	U	5	R	4.8	J	4.9	U	4.9	U
1,2-Dichloropropane	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
1,3,5-Trimethylbenzene	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
1,3-Dichlorobenzene	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
1,3-Dichloropropane	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
1,4-Dichlorobenzene	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
2,2-Dichloropropane	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
2-Butanone	µg/kg	--	10	UJ	10	UJ	19		14	J	9.7	U	5	J	6.4	J
2-Chlorotoluene	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
2-Hexanone	µg/kg	--	51	UJ	50	UJ	50	U	50	U	49	U	49	U	49	U
4-Chlorotoluene	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
4-Isopropyltoluene	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
4-Methyl-2-Pentanone	µg/kg	--	10	UJ	10	UJ	10	U	10	U	9.7	U	9.7	U	9.8	U
Acetone	µg/kg	--	16		7.2	J	60		64	J	18	J	21	J	15	J
Benzene	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
Benzene, Propyl-	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
Bromobenzene	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
Bromochloromethane	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
Bromodichloromethane	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
Bromoform	µg/kg	--	10	U	10	U	10	U	10	R	9.7	UJ	9.7	UJ	9.8	UJ
Bromomethane	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U

Table 1

Summary of Additional System Design Investigation Soil Sample Results

Sample Location		Alameda Background Concentration	N11-3		N11-5		N12-0		N12-3		N12-5		P12-0		P12-5	
Sample Depth (feet bgs)			3		5		0		3		5		0		5	
Date Collected			8/15/2006		8/15/2006		8/28/2006		8/16/2006		8/16/2006		8/28/2006		8/15/2006	
Parameter	Units		Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Carbon Tetrachloride	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
Chlorobenzene	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
Chlorodibromomethane	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
Chloroethane	µg/kg	--	10	U	10	U	10	U	10	U	9.7	U	9.7	U	9.8	U
Chloroform	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
Chloromethane	µg/kg	--	10	U	10	U	12		10	U	9.7	U	9.7	U	9.8	U
Cis-1,2-Dichloroethene	µg/kg	--	2.2	J	4.2	J	5	U	5	U	5.2	J	4.9	U	4.9	U
Dibromomethane	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
Dichlorodifluoromethane	µg/kg	--	10	U	10	U	10	U	10	U	9.7	U	9.7	U	9.8	U
Ethylbenzene	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
Hexachlorobutadiene	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
Isopropylbenzene	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
M,P-Xylene	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
Methyl Tert-Butyl Ether	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
Methylene Chloride	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
N-Butylbenzene	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
Naphthalene	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
O-Xylene	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
Sec-Butylbenzene	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
Styrene	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
T-Butyl Alcohol (Tba)	µg/kg	--	21	UJ	20	UJ	20	U	20	U	19	U	19	U	20	U
Tert-Butylbenzene	µg/kg	--	5.1	U	5	U	5	U	5	R	4.9	UJ	4.9	UJ	4.9	UJ
Tetrachloroethene	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	4.9	U
Toluene	µg/kg	--	5.1	U	5	U	5	U	5	U	4.9	U	4.9	U	44	J
Trans-1,2-Dichloroethene	µg/kg	--	5.1	U	5	U	5	U	5	U	4.1	J	4.9	U	4.9	U
Trichloroethene	µg/kg	--	11		9.3		5	U	5	U	4.1	J	2.1	J	4.9	U
Trichlorofluoromethane	µg/kg	--	5.1	UJ	5	UJ	5	U	5	U	4.9	U	4.9	U	4.9	U
Vinyl Chloride	µg/kg	--	10	U	10	U	10	U	10	U	7.3	J	9.7	U	17	J

Table 1
Summary of Additional System Design Investigation Soil Sample Results

Table 1 Notes:

µg/kg denotes micrograms per kilogram.
bgs denotes below ground surface.
J denotes estimated value.
mg/kg denotes milligrams per kilogram.
NA denotes not analyzed.
U denotes not detected at or above the stated reporting limit.
UJ denotes estimated reporting limit.

Table 2
Summary of Additional System Design Investigation Groundwater Sample Results

Location Code		Alameda Background Metals [1] Concentration	D-6		E-5		J-5		K-12		K-13		L-11		L-12		L-13		L-14		M-10		M-11		M-13		M-14	
Sample Number			4-2-D6		4-2-E5		SW OF BLDG 360 ANNEX		4-2-K12		4-2-K13		4-2-L11		4-2-L12		4-2-L13		4-2-L14		4-2-M10		4-2-M11		4-2-M13		4-2-M14	
Sample Date			8/25/2006		8/25/2006		8/24/2006		8/23/2006		8/24/2006		8/22/2006		8/22/2006		8/25/2006		8/24/2006		8/22/2006		8/22/2006		8/24/2006		8/23/2006	
Parameter	Units		Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Metals																												
Antimony	µg/L	11.8	1	U	1	U	1	U	1	U	1.32		1	U	1	U	2.3		3.99		1	U	1	U	1	U	1	U
Arsenic	µg/L	8	12.8		16.3		9.95		2.75		3.67		5.35		3.73		11.1		4.56		5.29		3.71		1.12		3.57	
Barium	µg/L	123.3	193		495		131		67.6		73.2		85.8		80.5		427		111		67.5		120		164		243	
Beryllium	µg/L	1	0.768	J	1.83		1	U	1	U	1	U	1	U	1	U	0.952	J	1	U	1	U	1	U	1	U	1	U
Cadmium	µg/L	1.3	1	U	0.606	J	1	U	1	U	1	U	1	U	1	U	86.8		2.48		1	U	1	U	3.76		1	U
Calcium	µg/L	78223	9230		NA		NA		NA		30400		25000		NA		62700		NA		NA		NA		NA		NA	
Chromium	µg/L	3.4	62.1		125		18.8		3.07		23.7		12.5		4.02		10500		34.6		15.8		5.98		291		0.884	J
Cobalt	µg/L	100.6	15.8		33.6		5.85		2.56		7.64		5.28		4.12		43.4		7.48		5.24		2.88		9.24		7.12	
Copper	µg/L	4.6	20.7		55.6		6.24		2.46		7.97		4.74		2.17	J	123		7.17		5.92		1.14	J	1.78		1.03	
Hexavalent Chromium	µg/L	7.5	13.9	J	27.2	J	10	U	10	UJ	10	UJ	10	UJ	10	U	778	J	10	UJ	10	U	10	U	13.9	J	10	UJ
Iron	µg/L	1624	25800		NA		NA		NA		6570		2560		NA		41700		NA		NA		NA		NA		NA	
Lead	µg/L	1.3	7.72		17.8		2.32		0.626	J	2.01		2.18		0.541	J	219		2.11		0.888	J	1	U	1	U	1	U
Magnesium	µg/L	--	9120		NA		NA		NA		14900		17400		NA		18200		NA		NA		NA		NA		NA	
Manganese	µg/L	1171	509		NA		NA		NA		525		660		NA		835		NA		NA		NA		NA		NA	
Mercury	µg/L	0.1	0.2	U	0.2	U	0.2	U	0.2	UJ	0.2	U	0.2	UJ	0.2	U	0.385		0.2	U	0.2	UJ	0.2	U	0.2	U	0.2	UJ
Molybdenum	µg/L	5.6	65.2		26.5		30		19.9	U	30.9		21.9	U	21.3		107		90.9		57.1		8.7		34.1		18.1	U
Nickel	µg/L	7.4	84.5		158		22		6.27		25.1		14.5		10.5		719		48.7		22.1		6.55		146		15.8	
Potassium	µg/L	40552	1560		NA		NA		NA		7490		17200		NA		16700		NA		NA		NA		NA		NA	
Selenium	µg/L	1.9	1	U	0.93	J	1	U	1	U	1	U	1	U	1	U	1.27		0.521	J	0.691	J	0.76	J	0.986	J	0.767	J
Silver	µg/L	1.6	1	U	1	U	0.755	J	1	U	0.744	J	1	U	1	U	61.6		0.939	J	1	U	1	U	1	U	1	U
Sodium	µg/L	937369	270000	J	NA		NA		NA		94900		222000		NA		118000	J	NA		NA		NA		NA		NA	
Thallium	µg/L	2.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Vanadium	µg/L	8.4	63.3		121		20.3		13.2		23.1		23.6		7.76		91.3		8.79		20.1		3.51		3.45		4.12	
Zinc	µg/L	10.5	54.9		108		25.6		9.48	J	19.9		21		6.43	J	145		12.6		15.7		6.34	J	13		7.36	J
General Chemistry																												
Carbon, Total Organic	mg/L	--	11.4		NA		NA		NA		NA		11.3		NA		15		NA		NA		NA		NA		NA	
Chloride	mg/L	--	20.7		NA		NA		NA		NA		101		NA		65.7		NA		NA		NA		NA		NA	
Cyanide, Total	mg/L	--	NA		NA		0.01	U	0.01	U	0.0432		0.104		NA		0.0573		NA		NA		0.106		NA		0.01	U
Sulfate	mg/L	--	24.9		NA		NA		NA		NA		30.5		NA		56.9		NA		NA		NA		NA		NA	
Total Alkalinity	mg/L	--	600		NA		NA		NA		NA		485		NA		300		NA		NA		NA		NA		NA	
Total Dissolved Solids	mg/L	--	1650		NA		NA		NA		NA		885		NA		560		NA		NA		NA		NA		NA	
Volatile Organic Compounds																												
1,1,1,2-Tetrachloroethane	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	290		45		0.5	U	9.6		5800		110		31	
1,1,2,2-Tetrachloroethane	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	13		5.9		5.8		12		56		18		120	
1,1-Dichloroethane	µg/L	--	14		5.1		2.5		33		0.96		16		580		210		280		130		3700		500		5700	
1,1-Dichloroethene	µg/L	--	1.4		0.85		15		13		0.5		11		530		200		140		1200		5500		880		8500	
1,1-Dichloropropene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trimethylbenzene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dibromo-3-Chloropropane	µg/L	--	2	UJ	2	UJ	2	UJ	2	U	2	UJ	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
1,2-Dibromoethane	µg/L	--	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichlorobenzene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	µg/L	--	0.5	U	0.5	U	0.25	J	0.64		0.5	U	0.5	U	14		8.3		19		14		62		29		220	
1,2-Dichloropropane	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.32	J
1,3,5-Trimethylbenzene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U
1,3-Dichlorobenzene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropane	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	UJ	0.5	UJ	0.5	U	0.5	UJ	0.5	UJ
2-Butanone	µg/L	--	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Chlorotoluene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2-Hexanone	µg/L	--	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U

Table 2
Summary of Additional System Design Investigation Groundwater Sample Results

Location Code		Alameda Background Metals [1] Concentration	D-6		E-5		J-5		K-12		K-13		L-11		L-12		L-13		L-14		M-10		M-11		M-13		M-14	
Sample Number			4-2-D6		4-2-E5		SW OF BLDG 360 ANNEX		4-2-K12		4-2-K13		4-2-L11		4-2-L12		4-2-L13		4-2-L14		4-2-M10		4-2-M11		4-2-M13		4-2-M14	
Sample Date			8/25/2006		8/25/2006		8/24/2006		8/23/2006		8/24/2006		8/22/2006		8/22/2006		8/25/2006		8/24/2006		8/22/2006		8/22/2006		8/24/2006		8/23/2006	
Parameter	Units		Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
4-Chlorotoluene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Isopropyltoluene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
4-Methyl-2-Pentanone	µg/L	--	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Acetone	µg/L	--	10	U	10	U	10	U	10	U	10	U	5.3	J	10	U	10	U	10	U	10	U	5.3	J	10	U	10	U
Benzene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.33	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.83	
Benzene, Propyl-	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromochloromethane	µg/L	--	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Bromodichloromethane	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromomethane	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon Tetrachloride	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	µg/L	--	0.5	U	0.5	U	0.28	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorodibromomethane	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.75		1.1		0.97		0.5	UJ	4.1		0.5	U	3.7	UJ
Chloroform	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.94		2.1		0.5	U	0.92		5		1.1		4.6	
Chloromethane	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1.7	
Cis-1,2-Dichloroethene	µg/L	--	1.3		1.7		1.3		2.9		0.5	U	8.4		12		3.6		4.1		13		34		10		82	
Dibromomethane	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	µg/L	--	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Isopropylbenzene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
M,P-Xylene	µg/L	--	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.91	J	1	U	1	U	1	U	1	U
Methyl Tert-Butyl Ether	µg/L	--	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Methylene Chloride	µg/L	--	1	U	1	U	1	U	1	U	1	U	1	UJ	1	UJ	1	U	1	U	1	U	1.1	J	1	U	1.2	
N-Butylbenzene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
O-Xylene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.28	J	0.5	U	0.5	U	0.5	U	0.5	U
Sec-Butylbenzene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
T-Butyl Alcohol (Tba)	µg/L	--	20	U	20	U	20	U	20	U	20	U	20	UJ	20	U	20	U	20	U	20	UJ	20	U	20	U	20	UJ
Tert-Butylbenzene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.61		0.5	U	0.8	
Toluene	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.24	J	0.39	J	0.42	J	0.5	U	0.5	U
Trans-1,2-Dichloroethene	µg/L	--	0.5	U	0.29	J	0.49	J	0.76		0.5	U	0.79		5.3		1.8		1.5		4.5		18		4.9		42	
Trichloroethene	µg/L	--	0.29	J	0.28	J	0.25	J	1.4		0.5	U	1.2		6.4		0.59		0.5	U	7.5		12		1.1		8.2	
Trichlorofluoromethane	µg/L	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	UJ	0.5	U	0.5	U
Vinyl Chloride	µg/L	--	0.5	U	0.4	J	0.42	J	0.65		0.5	U	0.5	U	13		1.6		4		2.7		34		5		48	

Table 2
Summary of Additional System Design Investigation Groundwater Sample Results

Location Code		Alameda Background Metals [1] Concentration	N-11		N-12		N-13		P-12		P-13	
Sample Number			4-2-N11		4-2-N12		4-2-N13		4-2-P12		4-2-P13	
Sample Date			8/22/2006		8/23/2006		8/23/2006		8/22/2006		8/23/2006	
Parameter	Units		Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Metals												
Antimony	µg/L	11.8	1	U	1	U	1	U	1	U	1	U
Arsenic	µg/L	8	1.92		14.9		7.8		6.7		4.28	
Barium	µg/L	123.3	155		432		481		438		718	
Beryllium	µg/L	1	1	U	0.86	J	1.08		1	U	1.05	
Cadmium	µg/L	1.3	1	U	0.683	J	2.12		1.98		55.9	
Calcium	µg/L	78223	78100	J	NA		154000		NA		NA	
Chromium	µg/L	3.4	15.3		48.4		3.2		10.6		9.65	
Cobalt	µg/L	100.6	4.06		39.1		327		110		810	
Copper	µg/L	4.6	1	UJ	14.4		1.1		1.16	UJ	37.5	
Hexavalent Chromium	µg/L	7.5	10	UJ	10	U	10	UJ	10	UJ	10	UJ
Iron	µg/L	1624	266	J	NA		57200		NA		NA	
Lead	µg/L	1.3	1	U	5.12		1	U	1	U	0.573	J
Magnesium	µg/L	--	46600		NA		49300		NA		NA	
Manganese	µg/L	1171	2950		NA		15700		NA		NA	
Mercury	µg/L	0.1	0.2	U	0.2	UJ	0.2	UJ	0.2	U	0.2	UJ
Molybdenum	µg/L	5.6	6.4		10.4	U	3.65	U	2	U	2.89	U
Nickel	µg/L	7.4	3.84		137		1120		442		5760	
Potassium	µg/L	40552	27400		NA		31400		NA		NA	
Selenium	µg/L	1.9	1.29		1.54		1.1		1.3		0.896	J
Silver	µg/L	1.6	1	U	1	U	1	U	1	U	1	U
Sodium	µg/L	937369	101000	J	NA		179000		NA		NA	
Thallium	µg/L	2.3	1	U	1	U	1	U	1	U	1	U
Vanadium	µg/L	8.4	2.01		40		2.47		2		1.59	
Zinc	µg/L	10.5	10.9		53.1		18.7		24.4		924	
General Chemistry												
Carbon, Total Organic	mg/L	--	5.89		NA		10.8		NA		NA	
Chloride	mg/L	--	265		NA		713		NA		NA	
Cyanide, Total	mg/L	--	0.01	U	NA		0.01	U	NA		0.01	U
Sulfate	mg/L	--	55.9		NA		30.2		NA		NA	
Total Alkalinity	mg/L	--	240		NA		108		NA		NA	
Total Dissolved Solids	mg/L	--	875		NA		1720		NA		NA	
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	µg/L	--	0.5	U	2.5	U	0.5	U	0.28	J	0.96	J
1,1,1-Trichloroethane	µg/L	--	5000		15000		30000		NA		68000	
1,1,2,2-Tetrachloroethane	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	µg/L	--	38		160		340		100	J	250	
1,1-Dichloroethane	µg/L	--	2300		7600		23000		NA		11000	
1,1-Dichloroethene	µg/L	--	6800		18000		37000		NA		18000	
1,1-Dichloropropene	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trimethylbenzene	µg/L	--	0.5	U	2.5	U	0.23	J	0.5	U	0.64	J
1,2-Dibromo-3-Chloropropane	µg/L	--	2	U	10	U	2	U	2	U	2	U
1,2-Dibromoethane	µg/L	--	1	U	5	U	1	U	1	U	1	U
1,2-Dichlorobenzene	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	µg/L	--	36		200		410		180		300	
1,2-Dichloropropane	µg/L	--	0.5	U	2.5	U	0.34	J	0.5	U	0.5	U
1,3,5-Trimethylbenzene	µg/L	--	0.5	UJ	2.5	U	0.5	U	0.5	UJ	0.5	U
1,3-Dichlorobenzene	µg/L	--	0.4	J	2.5	U	2.2	J	0.51	J	0.71	J
1,3-Dichloropropane	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	µg/L	--	0.5	U	2.5	UJ	0.5	UJ	0.5	U	0.5	UJ
2-Butanone	µg/L	--	10	U	390		970		47	J	830	
2-Chlorotoluene	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
2-Hexanone	µg/L	--	10	U	50	U	8.8	J	10	U	19	J

Table 2
Summary of Additional System Design Investigation Groundwater Sample Results

Location Code		Alameda Background Metals [1] Concentration	N-11		N-12		N-13		P-12		P-13	
Sample Number			4-2-N11		4-2-N12		4-2-N13		4-2-P12		4-2-P13	
Sample Date			8/22/2006		8/23/2006		8/23/2006		8/22/2006		8/23/2006	
Parameter	Units		Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
4-Chlorotoluene	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
4-Isopropyltoluene	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
4-Methyl-2-Pentanone	µg/L	--	10	U	50	U	10	U	10	U	10	U
Acetone	µg/L	--	10	U	180		250		48	J	610	
Benzene	µg/L	--	0.5	U	2.5	U	1.9	J	0.75	J	1.1	J
Benzene, Propyl-	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
Bromochloromethane	µg/L	--	1	U	5	U	1	U	1	U	1	U
Bromodichloromethane	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
Bromoform	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
Bromomethane	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
Carbon Tetrachloride	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
Chlorodibromomethane	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	µg/L	--	1.8		7.1		52	J	7.7	J	27	J
Chloroform	µg/L	--	5		9.5		29	J	12	J	19	J
Chloromethane	µg/L	--	0.5	U	8.7		12	J	0.75	J	22	J
Cis-1,2-Dichloroethene	µg/L	--	38		73		260		90		93	
Dibromomethane	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	µg/L	--	0.5	U	2.5	U	0.35	J	0.23	J	0.55	J
Hexachlorobutadiene	µg/L	--	1	U	5	U	1	U	1	U	1	U
Isopropylbenzene	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
M,P-Xylene	µg/L	--	1	U	5	U	1	U	1	U	0.66	J
Methyl Tert-Butyl Ether	µg/L	--	1	U	5	U	1	U	1	U	1	U
Methylene Chloride	µg/L	--	0.68	J	4	J	7.5	J	3.9	J	4.6	J
N-Butylbenzene	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	µg/L	--	0.5	U	2.5	U	0.5	U	0.67	J	0.55	J
O-Xylene	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.27	J
Sec-Butylbenzene	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
Styrene	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
T-Butyl Alcohol (Tba)	µg/L	--	20	U	100	U	20	UJ	20	U	20	UJ
Tert-Butylbenzene	µg/L	--	0.5	U	2.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	µg/L	--	2.4		3.7		8.7	J	6.4	J	7.4	J
Toluene	µg/L	--	0.55		340		650		480		1300	
Trans-1,2-Dichloroethene	µg/L	--	25		47		170		72		54	
Trichloroethene	µg/L	--	31		19		47	J	17	J	26	J
Trichlorofluoromethane	µg/L	--	0.5	UJ	2.5	U	0.5	U	0.5	UJ	0.5	U
Vinyl Chloride	µg/L	--	21		33		130		33	J	34	

Table 2
Summary of Additional System Design Investigation Groundwater Sample Results

Table 2 Notes

[1] Alameda background metals concentrations from:
Summary of Background Concentrations in Soil and Groundwater, Alameda Point, Alameda California, Tetra Tech EM Inc., Nobember 2001

µg/L denotes micrograms per liter.
EPA denotes U.S. Environmental Protection Agency.
J denotes estimated value.
mg/L denotes milligrams per liter.
NA denotes not analyzed.
U denotes not detected at or above the stated reporting limit.
UJ denotes estimated reporting limit.

Table 3
Summary of Groundwater SA Concentrations from Baseline through Post-Treatment

Parameter		1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Cis-1,2-Dichloroethene	Tetrachloro-ethene	Trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Total SAs
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Well ID	Collection Date	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
MW4-2-1	08/30/06	390	59	510	12000	110	46	< 5.0	37	16	4.8	13,173
MW4-2-1	12/11/06	220	45	550	16000	71	46	0.33	39	23	31	17,025
MW4-2-1	01/22/07	< 12	24	410	11000	50	43	< 12	37	26	< 12	11,590
MW4-2-1	02/13/07	< 12	17	280	10000	39	51	< 12	46	28	12	10,473
MW4-2-1	03/19/07	< 12	< 12	18	5300	7.3	75	< 12	50	32	8.2	5,491
MW4-2-1	05/16/07	< 0.50	< 0.50	0.67	1600	< 0.50	61	< 0.50	26	19	2.6	1,709
MW4-2-1	07/11/07	< 0.50	< 0.50	< 0.50	50	< 0.50	20	< 0.50	1.7	1.3	< 0.50	73
MW4-2-1	09/24/07	< 0.50	< 0.50	< 0.50	22	< 0.50	1.4	< 0.50	< 0.50	0.31	< 0.50	24
MW4-2-2	08/30/06	2100	140	100	41000	80	81	< 5.0	110	15	< 5.0	43,626
MW4-2-2	12/11/06	11	44	78	15000	48	45	0.29	41	17	5.6	15,290
MW4-2-2	01/22/07	< 12	< 12	12	6000	7.8	23	< 12	21	5.9	< 12	6,070
MW4-2-2	02/13/07	< 12	< 12	< 12	3700	< 12	18	< 12	14	< 12	< 12	3,732
MW4-2-2	03/19/07	< 5.0	< 5.0	< 5.0	1700	< 5.0	12	< 5.0	8.8	< 5.0	< 5.0	1,721
MW4-2-2	05/16/07	0.66	< 0.50	< 0.50	580	< 0.50	5.9	< 0.50	2.4	0.37	0.43	590
MW4-2-2	09/24/07	< 0.50	< 0.50	< 0.50	290	< 0.50	4.8	< 0.50	1.7	< 0.50	1.2	298
MW4-2-3	08/29/06	9400	300	130	72000	130	170	5	230	24	6.8	82,396
MW4-2-3	12/11/06	1200	240	150	33000	150	160	< 12	170	21	5.6	35,097
MW4-2-3	01/22/07	14	88	98	50000	86	130	< 12	160	20	< 12	50,596
MW4-2-3	02/13/07	5.3	12	25	36000	32	130	< 12	< 12	21	< 12	36,225
MW4-2-3	03/19/07	< 12	< 12	< 12	15000	< 12	96	< 12	93	11	< 12	15,200
MW4-2-3	04/10/07	3.2	< 0.50	< 0.50	600	< 0.50	14	< 0.50	8.1	1	< 0.50	626
MW4-2-3	05/16/07	2.4	< 0.50	< 0.50	400	< 0.50	2.3	< 0.50	0.68	0.74	< 0.50	406
MW4-2-3	09/24/07	0.89	< 0.50	< 0.50	170	< 0.50	3.4	< 0.50	1.3	< 0.50	0.3	176

Table 3
Summary of Groundwater SA Concentrations from Baseline through Post-Treatment

Parameter		1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Cis-1,2-Dichloroethene	Tetrachloro-ethene	Trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Total SAs
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Well ID	Collection Date	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
MW4-2-4	08/30/06	15	280	260	34000	400	210	< 5.0	200	22	3.1	35,390
MW4-2-4	12/13/06	< 12	99	180	14000	170	100	< 12	95	14	7.6	14,666
MW4-2-4	01/22/07	< 12	56	67	32000	110	230	< 12	250	30	< 12	32,743
MW4-2-4	02/13/07	< 12	< 12	< 12	9800	< 12	140	< 12	100	10	< 12	10,050
MW4-2-4	03/19/07	< 0.50	< 0.50	< 0.50	300	< 0.50	9.7	< 0.50	4.3	0.4	< 0.50	314
MW4-2-4	05/17/07	< 0.50	< 0.50	< 0.50	150	< 0.50	3.5	< 0.50	1.9	< 0.50	< 0.50	155
MW4-2-4	09/25/07	< 0.50	< 0.50	< 0.50	610	< 0.50	15	< 0.50	7.7	0.28	0.52	634
MW4-2-5	08/30/06	4.6	85	41	12000	82	73	< 5.0	79	2.9	< 5.0	12,368
MW4-2-5	12/11/06	< 0.50	79	140	26000	190	130	0.79	150	15	12	26,717
MW4-2-5	01/22/07	< 12	< 12	18	12000	38	94	< 12	100	6.5	< 12	12,257
MW4-2-5	02/13/07	< 12	< 12	< 12	9600	6.4	83	< 12	90	< 12	< 12	9,779
MW4-2-5	03/19/07	< 5.0	< 5.0	< 5.0	2600	< 5.0	42	< 5.0	31	< 5.0	< 5.0	2,673
MW4-2-5	05/16/07	< 5.0	< 5.0	< 5.0	4600	< 5.0	84	< 5.0	48	< 5.0	< 5.0	4,732
MW4-2-5	07/11/07	< 0.50	< 0.50	< 0.50	690	< 0.50	24	< 0.50	16	0.86	0.36	731
MW4-2-5	09/25/07	< 0.50	< 0.50	< 0.50	7400	< 0.50	120	< 0.50	75	1.7	2.2	7,599
MW4-2-6	08/29/06	360	300	1100	40000	460	270	3.6	220	40	43	42,797
MW4-2-6	12/12/06	69	230	790	31000	330	210	< 12	180	45	46	32,900
MW4-2-6	01/23/07	< 12	71	340	46000	130	160	< 12	220	45	24	46,990
MW4-2-6	02/14/07	< 12	56	130	27000	78	230	< 12	250	41	19	27,804
MW4-2-6	03/19/07	0.35	0.26	1.5	610	0.39	11	< 0.50	6	2.1	< 0.50	632
MW4-2-6	05/17/07	< 0.50	< 0.50	0.24	63	< 0.50	0.74	< 0.50	< 0.50	0.48	< 0.50	64
MW4-2-6	09/24/07	< 0.50	< 0.50	< 0.50	8.5	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	9

Table 3
Summary of Groundwater SA Concentrations from Baseline through Post-Treatment

Parameter		1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Cis-1,2-Dichloroethene	Tetrachloro-ethene	Trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Total SAs
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Well ID	Collection Date	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
MW4-2-7	08/29/06	2000	280	320	52000	230	190	2.3	210	32	13	**55,277**
MW4-2-7	12/11/06	< 12	310	290	29000	270	260	< 12	260	36	13	**30,439**
MW4-2-7	01/22/07	3.2	< 5.0	2.4	2600	< 5.0	25	< 5.0	19	2.2	< 5.0	**2,652**
MW4-2-7	02/13/07	1.2	< 0.50	0.64	700	< 0.50	1.7	< 0.50	2.8	0.61	< 0.50	**707**
MW4-2-7	03/19/07	0.73	< 0.50	< 0.50	310	< 0.50	0.39	< 0.50	0.44	0.42	< 0.50	**312**
MW4-2-7	05/16/07	0.5	< 0.50	0.2	140	< 0.50	< 0.50	< 0.50	< 0.50	0.2	< 0.50	**141**
MW4-2-7	09/24/07	< 0.50	< 0.50	< 0.50	15	< 0.50	1.7	< 0.50	0.41	< 0.50	< 0.50	**17**
MW4-2-8	08/29/06	1300	140	90	28000	120	130	2.1	150	8.5	5.2	**29,946**
MW4-2-8	12/12/06	24	160	69	40000	100	130	< 12	190	12	< 12	**40,685**
MW4-2-8	01/22/07	< 12	< 12	< 12	7600	< 12	110	< 12	81	< 12	7.1	**7,798**
MW4-2-8	02/13/07	< 12	< 12	< 12	510	< 12	27	< 12	8	< 12	< 12	**545**
MW4-2-8	03/20/07	0.62	< 0.50	< 0.50	110	< 0.50	0.93	< 0.50	0.43	< 0.50	< 0.50	**112**
MW4-2-8	05/16/07	0.34	< 0.50	< 0.50	190	< 0.50	1.6	< 0.50	0.48	< 0.50	0.32	**193**
MW4-2-8	09/24/07	< 0.50	< 0.50	< 0.50	270	< 0.50	6.8	< 0.50	3	< 0.50	0.83	**281**
MW4-2-9	08/29/06	450	69	1200	21000	120	79	< 5.0	57	63	26	**23,064**
MW4-2-9	12/12/06	130	35	570	9200	63	42	< 12	33	46	6.8	**10,126**
MW4-2-9	01/23/07	6.8	37	820	20000	89	71	< 12	61	63	14	**21,162**
MW4-2-9	02/14/07	< 12	40	800	19000	86	82	< 12	75	74	23	**20,180**
MW4-2-9	03/20/07	< 12	< 12	21	670	6.8	42	< 12	8.1	9.6	< 12	**758**
MW4-2-9	05/15/07	0.35	< 0.50	1.4	81	< 0.50	0.41	< 0.50	0.56	1.1	< 0.50	**85**
MW4-2-9	09/24/07	< 0.50	< 0.50	< 0.50	26	< 0.50	0.63	< 0.50	0.33	< 0.50	< 0.50	**27**

Table 3
Summary of Groundwater SA Concentrations from Baseline through Post-Treatment

Parameter		1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Cis-1,2-Dichloroethene	Tetrachloro-ethene	Trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Total SAs
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Well ID	Collection Date	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
MW4-2-10	08/30/06	6.1	110	120	17000	170	90	< 5.0	90	7	< 5.0	17,593
MW4-2-10	12/11/06	< 12	74	78	16000	110	94	< 12	99	9.7	< 12	16,465
MW4-2-10	01/22/07	< 12	< 12	< 12	4700	5.4	81	< 12	63	5.3	< 12	4,855
MW4-2-10	02/13/07	< 0.50	< 0.50	< 0.50	1400	< 0.50	43	< 0.50	27	2.1	0.73	1,473
MW4-2-10	03/19/07	< 5.0	< 5.0	< 5.0	3900	< 5.0	62	< 5.0	48	4.2	< 5.0	4,014
MW4-2-10	05/17/07	< 0.50	0.44	< 0.50	520	0.79	4.9	< 0.50	3.8	0.34	0.27	531
MW4-2-10	09/24/07	< 0.50	7	11	1400	9.7	18	< 0.50	16	2	1	1,465
MW4-2-11	08/29/06	44000	42	11000	14000	150	120	7.2	80	27	47	69,473
MW4-2-11	12/12/06	9300	190	7100	56000	140	370	5.5	280	45	280	73,711
MW4-2-11	01/23/07	16	4.2	63	3800	2.6	65	< 5.0	57	6.1	16	4,030
MW4-2-11	02/14/07	< 12	8.3	59	6000	< 12	180	< 12	86	8.3	16	6,358
MW4-2-11	03/20/07	1.7	11	34	2700	< 2.5	430	1.5	70	7.1	17	3,272
MW4-2-11	05/15/07	2.1	3.4	4.6	1500	< 2.5	200	< 2.5	40	3.1	3	1,756
MW4-2-11	09/24/07	0.47	< 0.50	1	18	< 0.50	1.3	< 0.50	0.22	< 0.50	0.5	21
MW4-2-12	08/29/06	20000	87	290	54000	51	54	9.6	86	18	7.1	74,603
MW4-2-12	12/12/06	28	81	83	66000	35	100	16	180	25	8.2	66,556
MW4-2-12	01/23/07	8.4	< 0.50	< 0.50	330	< 0.50	0.94	0.47	1.2	0.27	< 0.50	341
MW4-2-12	02/14/07	3.1	< 0.50	< 0.50	210	< 0.50	3.8	0.24	2.5	< 0.50	< 0.50	220
MW4-2-12	03/20/07	1.7	< 0.50	< 0.50	420	< 0.50	11	0.25	5	0.36	0.26	439
MW4-2-12	05/15/07	2	< 0.50	< 0.50	390	< 0.50	15	0.23	9.2	0.37	0.22	417
MW4-2-12	09/24/07	0.37	< 0.50	< 0.50	1300	< 0.50	15	< 0.50	11	0.33	1.3	1,328

Table 3
Summary of Groundwater SA Concentrations from Baseline through Post-Treatment

Parameter		1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Cis-1,2-Dichloroethene	Tetrachloro-ethene	Trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Total SAs
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Well ID	Collection Date	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
MW4-2-13	08/29/06	150000	810	350	240000	230	460	26	860	63	3.7	**392,803**
MW4-2-13	12/12/06	2600	1900	1400	150000	170	1600	41	1800	100	220	**159,831**
MW4-2-13	01/23/07	1500	8.7	20	8800	< 12	68	< 12	64	< 12	< 12	**10,461**
MW4-2-13	02/14/07	810	< 12	8.9	5100	< 12	100	< 12	52	< 12	< 12	**6,071**
MW4-2-13	03/20/07	310	< 12	< 12	5300	< 12	280	< 12	120	5.8	< 12	**6,016**
MW4-2-13	05/15/07	350	< 12	< 12	7100	< 12	190	< 12	110	< 12	< 12	**7,750**
MW4-2-13	07/11/07	210	0.87	0.66	730	< 0.50	66	0.45	21	0.78	0.64	**1,030**
MW4-2-13	09/24/07	21	< 0.50	< 0.50	1400	< 0.50	70	< 0.50	34	0.86	1.9	**1,528**
MW4-2-14	08/28/06	26	160	5600	8000	260	140	< 5.0	80	11	130	**14,407**
MW4-2-14	12/13/06	5.9	170	8200	15000	340	160	< 12	99	11	140	**24,126**
MW4-2-14	01/24/07	< 12	220	8300	14000	350	200	< 12	130	20	77	**23,297**
MW4-2-14	02/15/07	< 12	270	8200	15000	490	240	< 12	150	19	88	**24,457**
MW4-2-14	03/20/07	< 12	210	8900	17000	280	200	< 12	120	23	110	**26,843**
MW4-2-14	05/15/07	< 12	190	2100	5200	150	220	5.4	100	18	52	**8,035**
MW4-2-14	07/11/07	< 0.50	2.6	46	78	1	7.2	0.49	2.9	1.7	3.9	**144**
MW4-2-14	09/25/07	< 0.50	< 0.50	4.6	16	< 0.50	< 0.50	< 0.50	0.36	< 0.50	1.6	**23**
MW4-2-15	08/29/06	10	29	44	7800	29	22	< 5.0	22	2.6	< 5.0	**7,959**
MW4-2-15	12/13/06	< 12	37	77	17000	45	33	< 12	43	< 12	< 12	**17,235**
MW4-2-15	01/24/07	< 12	13	57	9900	19	34	< 12	38	< 12	< 12	**10,061**
MW4-2-15	02/14/07	< 12	< 12	< 12	10000	< 12	28	< 12	32	< 12	< 12	**10,060**
MW4-2-15	03/19/07	< 12	< 12	< 12	3200	< 12	22	< 12	16	< 12	< 12	**3,238**
MW4-2-15	05/15/07	< 12	< 12	< 12	5000	< 12	26	< 12	19	< 12	< 12	**5,045**
MW4-2-15	07/11/07	0.35	< 0.50	0.49	830	< 0.50	1.2	0.47	1.7	0.79	< 0.50	**835**
MW4-2-15	09/24/07	< 0.50	< 0.50	< 0.50	490	< 0.50	4.7	< 0.50	2.4	0.36	0.29	**498**

Table 3
Summary of Groundwater SA Concentrations from Baseline through Post-Treatment

Parameter		1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Cis-1,2-Dichloroethene	Tetrachloro-ethene	Trans-1,2-Dichloroethene	Trichloroethene	Vinyl Chloride	Total SAs
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Well ID	Collection Date	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	
MW4-2-16	08/28/06	5500	120	5300	22000	190	120	6	92	15	160	33,503
MW4-2-16	12/12/06	8000	130	5300	38000	200	120	10	120	22	220	52,122
MW4-2-16	01/24/07	1200	180	7200	53000	190	150	16	160	38	67	62,201
MW4-2-16	02/15/07	23	250	4900	39000	260	210	15	190	31	83	44,962
MW4-2-16	03/20/07	6.6	300	1100	16000	140	190	7.1	110	23	64	17,941
MW4-2-16	04/10/07	5.1	6.6	6.4	830	0.42	2.9	0.67	1.7	1.1	0.32	855
MW4-2-16	05/15/07	5.5	1.4	5.5	630	< 0.50	0.76	0.79	0.79	0.65	0.23	646
MW4-2-16	09/25/07	0.46	< 0.50	0.47	1200	< 0.50	0.54	< 0.50	1.4	< 0.50	0.69	1,204
MW4-2-17	08/28/06	970	4.4	15	1500	2.9	2.5	0.4	3.8	0.68	0.57	2,500
MW4-2-17	12/13/06	5.5	4.7	43	610	11	5.2	< 0.50	4.9	0.38	1.1	686
MW4-2-17	01/24/07	0.43	2.6	13	1200	3	4	1.5	7.8	1.2	1.1	1,235
MW4-2-17	02/15/07	0.22	1.3	2	1600	0.9	4.6	1.4	9.9	1	0.73	1,622
MW4-2-17	03/19/07	< 0.50	< 0.50	< 0.50	790	< 0.50	2.9	0.58	6.4	0.69	0.21	801
MW4-2-17	05/15/07	0.34	< 0.50	< 0.50	1100	< 0.50	1.4	0.36	2	0.34	< 0.50	1,104
MW4-2-17	09/24/07	< 0.50	< 0.50	< 0.50	12000	< 0.50	22	0.65	20	1.4	0.8	12,045
MW4-2-17	10/23/07	< 0.50	< 0.50	< 0.50	4700	< 0.50	13	0.26	7.8	0.55	0.3	4,722
MW4-2-18	05/15/07	< 0.50	2.8	220	270	9	5.4	< 0.50	3.8	0.69	91	603
MW4-2-18	09/25/07	< 0.50	0.94	120	310	4.5	11	< 0.50	5.2	0.66	24	476
MW4-2-19	05/15/07	< 12	9.3	470	33000	9	190	5.1	190	94	50	34,017
MW4-2-19	07/11/07	3.2	3	23	1200	2.9	110	< 2.5	33	16	4	1,395
MW4-2-19	09/24/07	4.6	0.24	14	660	0.34	27	< 0.50	9.9	8.5	15	740

Notes:

SAs denotes site-specific Screening Analytes.

Table 4
Groundwater VOC Concentration Comparison
Between Baseline and Last Progress Sampling

	August 2006 (Baseline)	May/July 2007 (Last Progress Sampling)	Percent Reduction
Well ID	VOC Concentration (µg/L)		
MW4-2-1	13,173	73	99.5
MW4-2-2	43,626	587	98.7
MW4-2-3	82,396	400	99.5
MW4-2-4	35,390	155	99.6
MW4-2-5	12,368	731	94.0
MW4-2-6	42,797	64	99.9
MW4-2-7	55,277	140	99.8
MW4-2-8	29,946	190	99.4
MW4-2-9	23,064	81	99.6
MW4-2-10	17,593	531	97.0
MW4-2-11	69,473	1,756	97.5
MW4-2-12	74,603	417	99.4
MW4-2-13	392,803	1,030	99.7
MW4-2-14	14,402	144	99.0
MW4-2-15	7,959	835	89.5
MW4-2-16	33,503	646	98.0
MW4-2-17	2,500	1,104	55.8

VOC (volatile organic compound) concentration is based on the total concentration of the 10 screening analytes (refer to Table 3 of the Removal Action Completion Report for a complete list of the VOCs).

MW4-2-18 and MW4-2-19 were not included because these two wells were not part of the original DNAPL treatment monitoring well network.

µg/L denotes microgram per liter.

Table 5
Groundwater Chloriniated VOC Concentration Comparison Between May/July and September 2007

Well Identification	May/July 2007	September 2007	Rebound
	Chlorinated VOC Concentration (µg/L)		
MW4-2-1	73	24	No
MW4-2-2	587	298	No
MW4-2-3	400	175	No
MW4-2-4	155	634	Yes
MW4-2-5	731	7,599	Yes
MW4-2-6	64	9	No
MW4-2-7	140	17	No
MW4-2-8	190	281	Yes
MW4-2-9	81	27	No
MW4-2-10	531	1,465	Yes
MW4-2-11	1,756	21	No
MW4-2-12	417	1,328	Yes
MW4-2-13	1,030	1,528	Yes
MW4-2-14	144	23	No
MW4-2-15	835	498	No
MW4-2-16	646	1,204	Yes
MW4-2-17	1,104	12,045/4,722[a]	Yes
MW4-2-18	603	476	No
MW4-2-19	1,395	740	No

Chlorinated volatile organic compound (VOC) concentration is based on the total concentration of the 10 screening analytes (refer to Table 3 of the Removal Action Completion Report for a complete list of the VOCs).

[a]MW4-2-17 was sampled again in October 2007. The sample results are reported at 4,722 µg/L as shown.

µg/L denotes microgram per liter.

Table 6
DO and ORP Data Comparison Between Baseline and Post-Treatment
Plume 4-2, Building 360, Alameda Point, Alameda, California

Well Identification	Baseline (August 2006)		Post-Treatment (September 2007)		Post-Treatment (October 2007)	
	DO (ppm)	ORP (mV)	DO (ppm)	ORP (mV)	DO (ppm)	ORP (mV)
MW4-2-1	0.7	131.0	2.0	-195.5	NR	NR
MW4-2-2	2.3	48.1	0.2	-80.3	NR	NR
MW4-2-3	12.1[a]	98.1	0.6	-125.7	NR	NR
MW4-2-4	3.1	128.1	0.2	-124.5	NR	NR
MW4-2-5	0.5	162.8	0.3	-200.2	NR	NR
MW4-2-6	1.9	56.8	0.8	-82.4	3.5	-36.6
MW4-2-7	1.7	35.4	0.4	27.0	NR	NR
MW4-2-8	2.3	79.2	0.2	-164.8	NR	NR
MW4-2-9	0.3	-54.0	1.9	51.5	2.1	91.8
MW4-2-10	3.3	75.1	0.3	35.9	NR	NR
MW4-2-11	5.2	-62.4	0.4	-285.9	2.3	-271.0
MW4-2-12	1.2	-54.4	0.4	37.0	NR	NR
MW4-2-13	1.0	74.5	0.8	68.1	1.3	-218.2
MW4-2-14	3.0	-10.1	1.8	-79.2	NR	NR
MW4-2-15	1.0	-59.9	0.2	-142.3	NR	NR
MW4-2-16	2.9	-17.2	0.3	-79.2	NR	NR
MW4-2-17	2.0	4.5	0.8	-112.1	NR	NR
MW4-2-18	9.5	-7.2	0.6	-109.4	1.0	-66.0
MW4-2-19	5.2	143.2	1.5	-184.2	1.7	-255.0

DO denotes dissolved oxygen.
mV denotes millivolt.
NR denotes not recorded.
ORP denotes Oxidation-Reduction Potential.
ppm denotes parts per million (or milligram per liter).
Note
[a] *This value is suspicious, probably due to reading error.*

Table 7
Summary of Additional System Design Investigation Groundwater Sample Results

Well ID	Alameda Metals		MW360-2		MW4-2-6		MW4-2-6		MW4-2-6		MW4-2-6		MW4-2-9		MW4-2-9		MW4-2-9		MW4-2-9		MW4-2-9		MW4-2-11	
Sample Collection Date	Background		08/30/06		08/29/06		12/12/06		01/23/07		02/14/07		10/23/07		08/29/06		12/12/06		01/23/07		02/14/07		10/23/07		08/29/06	
Parameter	Shallow Groundwater [1]	Units	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Metals																										
Aluminum	96.2	µg/L	NA		NA		1000	U	1000	U	NA		NA		NA		1000	U	1000	U	NA		NA		NA	
Antimony	11.8	µg/L	1	U	0.666	J	1	U	0.664	J	0.577	J	1	U	1	U	1	U	1	U	0.607	J	1	U	0.673	J
Arsenic	8	µg/L	3.19		8.42		4.48		7.75		10.8		23.2		3.32		9.63		16.5		25.1		5.27		3.76	
Barium	123.3	µg/L	683		145		269		859		850		752		57		43.8		63.2		78.4		293		63.6	
Beryllium	1	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Cadmium	1.3	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Calcium	78223	µg/L	138000		125000		101000		206000		NA		NA		26100		22100		25800		NA		NA		272000	
Chromium	3.4	µg/L	1	U	1.3		1	U	1.18		1.03		1	U	1	U	0.749	J	0.63	J	0.765	J	1	U	162	
Cobalt	4.6	µg/L	14.3		4.14		4.07		3.6		2.81		1.85		3.79		6.73		2.3		1.83		1.2		2.53	
Copper	7.5	µg/L	1	U	1.09		2.28		0.924	J	0.591	J	1	U	1.53		3.09		2.81		3.03		1	U	40.2	
Hexavalent Chromium	100.6	µg/L	10	UJ	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	92.6	
Iron	1624	µg/L	375	J	1000	U	1000	U	1000	U	NA		NA		1000	U	1000	U	1000	U	NA		NA		1000	U
Lead	1.3	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Magnesium	--	µg/L	163000		106000		104000		195000		NA		NA		33400		21900		23900		NA		NA		366	J
Manganese	1171	µg/L	3750		221		1340		3550		NA		NA		509		366		449		NA		NA		1	U
Mercury	0.1	µg/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	UJ	0.2	U	0.2	U	0.2	U	0.2	U	0.2	UJ	0.2	U
Molybdenum	5.6	µg/L	1.76	J	10.5		5.03		3.22		3.07		1.19	J	18.6		27.7		13.9		11.1		2	U	97	
Nickel	7.4	µg/L	17.8		9.49		7.34		12.5		9.3		6.36		20.5		23.3		10.9		10.6		30.9		9.1	
Potassium	40552	µg/L	990	J	7430		3950		5850		NA		NA		2980		3750		5250		NA		NA		34600	
Selenium	1.9	µg/L	1	U	1.2		1.04		2		1.68		0.94	J	0.901	J	0.874	J	2.19		2.74		0.744	J	2.04	
Silver	1.6	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Sodium	937369	µg/L	435000		353000		280000		532000		NA		NA		276000		239000		286000		NA		NA		148000	
Thallium	2.3	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Vanadium	8.4	µg/L	1	U	6.72		8.17		8.3		6.85		3		1.08		1.51		4.55		4.59		3.77		12.1	
Zinc	10.5	µg/L	7.58	J	5	J	14.1		9.56	J	6.5	J	8.48	J	50.7		16.1		13.3		18.3		10.6		10	U
General Chemistry																										
Carbon, Total Organic	--	mg/L	8.35		11.7		NA		NA		NA		NA		13.7		NA		NA		NA		NA		28.1	
Chloride	--	mg/L	776		772		NA		NA		NA		NA		316		NA		NA		NA		NA		542	
Cyanide, Total	--	mg/L	0.01	U	0.01	U	0.01	U	NA		NA		NA		0.01	U	0.01	U	NA		NA		NA		0.01	U
Sulfate	--	mg/L	152		122		NA		NA		NA		NA		71.1		NA		NA		NA		NA		69.2	
Total Alkalinity	--	mg/L	444		289		NA		NA		NA		NA		313		NA		NA		NA		NA		254	
Total Dissolved Solids	--	mg/L	1960		1710		NA		NA		NA		NA		920		NA		NA		NA		NA		1230	

Table 7
Summary of Additional System Design Investigation Groundwater Sample Results

Well ID	Alameda Metals		MW4-2-11		MW4-2-11		MW4-2-11		MW4-2-11		MW4-2-13		MW4-2-13		MW4-2-13		MW4-2-13		MW4-2-14		MW4-2-18		MW4-2-18		MW4-2-18	
Sample Collection Date	Background		12/12/06		01/23/07		02/14/07		10/23/07		12/12/06		01/23/07		02/14/07		10/23/07		06/28/06		08/31/06		12/12/06		01/23/07	
Parameter	Shallow Groundwater [1]	Units	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Metals																										
Aluminum	96.2	µg/L	1000	U	642	J	NA		NA		2370		240	J	NA		NA		NA		NA		1000	U	1000	U
Antimony	11.8	µg/L	0.975	J	1.76		1.17		1	U	1	U	0.671	J	0.928	J	1	U	0.519	J	1	U	0.769	J	1	U
Arsenic	8	µg/L	29.5		113		117		160		34		62.7		39.2		10.4		15.2		2.27		6		7.83	
Barium	123.3	µg/L	105		74		146		871		510		305		400		250		275		68.8		16.9		12.6	
Beryllium	1	µg/L	1	U	1	U	1	U	1	U	3.51		1	U	1	U	1	U	1	U	1	U	1	U	1	U
Cadmium	1.3	µg/L	1	U	1	U	1	U	1	U	17.9		2.3		3.14		16.1		1	U	1	U	1	U	1	U
Calcium	78223	µg/L	182000		102000		NA		NA		113000		42100		NA		NA		189000		NA		67900		75000	
Chromium	3.4	µg/L	2.85		77.7		44.5		13.1		7700		428		201		17.7		3.67		7		1.27		2.05	
Cobalt	4.6	µg/L	6.85		5.1		4.62		3.1		357		5.47		3.43		2.08		8.31		2.98		1.88		2.12	
Copper	7.5	µg/L	1.03		2.26		1	U	1	U	1.9		3.37		1.64		96.5		1.36		1	U	1	U	1	U
Hexavalent Chromium	100.6	µg/L	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Iron	1624	µg/L	263	J	576	J	NA		NA		171000		3570		NA		NA		6920		NA		1000	U	205	J
Lead	1.3	µg/L	1	U	0.898	J	1	U	1	U	11.5		1.04		1.31		0.781	J	1	U	1	U	1	U	1	U
Magnesium	--	µg/L	67600		3310		NA		NA		76000		35000		NA		NA		116000		NA		29100		20600	
Manganese	1171	µg/L	1190		102		NA				12900		2100		NA		NA		13700		NA		740		681	
Mercury	0.1	µg/L	0.2	U	0.2	U	0.2	U	0.2	UJ	0.2	U	0.218		0.185	J	0.354	J	0.2	U	0.2	U	0.2	UJ	0.2	U
Molybdenum	5.6	µg/L	25.2		39.5		21.1		11.4		8.56		38.9		14.1		1.38	J	4.9		9.26		10.7		9.44	
Nickel	7.4	µg/L	13.6		13		14.8		2.4		15800		98.9		31.7		31		12.2		7.56		5.73		5.13	
Potassium	40552	µg/L	50600		45800		NA				24900		17000		NA		NA		29000		NA		9110		10500	
Selenium	1.9	µg/L	2.65		10		7.33		2.75		1.24		1.04		1.04		1	U	0.776	J	1	U	1	U	1	U
Silver	1.6	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1.09		1	U	1	U	1	U	1	U
Sodium	937369	µg/L	227000		125000		NA				1680000		1570000		NA		NA		356000		NA		106000		95200	
Thallium	2.3	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Vanadium	8.4	µg/L	3.06		17.9		10.2		2.89		34		5		5.07		2.51		5.58		3.32		1	U	0.532	J
Zinc	10.5	µg/L	8.36	J	7.74	J	5.5	J	9	J	148		14.4		7.22	J	6.22	J	10	U	5.31	J	13.7		9.09	J
General Chemistry																										
Carbon, Total Organic	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		14.8		NA		NA		NA	
Chloride	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		752		NA		NA		NA	
Cyanide, Total	--	mg/L	0.028		0.01	U	0.01	U	0.01	U	NA		NA		NA		NA		0.01	U	NA		NA		NA	
Sulfate	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		46.4		NA		NA		NA	
Total Alkalinity	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		534		NA		NA		NA	
Total Dissolved Solids	--	mg/L	NA		NA		NA		NA		NA		NA		NA		NA		1930		NA		NA		NA	

Table 7
Summary of Additional System Design Investigation Groundwater Sample Results

Well ID	Alameda Metals		MW4-2-18		MW4-2-18		MW4-2-19		MW4-2-19		MW4-2-19		MW4-2-19		MW4-2-19	
Sample Collection Date	Background		02/14/07		10/23/07		08/31/06		12/13/06		01/23/07		02/14/07		10/23/07	
Parameter	Shallow Groundwater [1]	Units	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Metals																
Aluminum	96.2	µg/L	NA		NA		NA		1000	U	1000	U	NA		NA	
Antimony	11.8	µg/L	1	U	1	U	1	U	0.757	J	1	U	0.618	J	1	U
Arsenic	8	µg/L	8.83		21.5		2.23		11.3		15.7		22.8		46.2	
Barium	123.3	µg/L	10.8		307		158		116		963		1170		1020	
Beryllium	1	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Cadmium	1.3	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Calcium	78223	µg/L	NA		NA		NA		61500		352000		NA		NA	
Chromium	3.4	µg/L	1.7		3.05		6.81		0.861	J	4.18		1.68		8.97	
Cobalt	4.6	µg/L	2.51		3.8		9.29		1.42		1.68		1.41		1.27	
Copper	7.5	µg/L	0.625	J	1	U	3.17		1.33		1.25		1	U	1	U
Hexavalent Chromium	100.6	µg/L	10	U	10	U	14.6		10	U	10	U	10	U	10	U
Iron	1624	µg/L	NA				NA		1000	U	448	J	NA		NA	
Lead	1.3	µg/L	1	U	1	U	1	U	1	U	0.816	J	1	U	1	U
Magnesium	--	µg/L	NA		NA		NA		24000		56600		NA		NA	
Manganese	1171	µg/L	NA		NA		NA		768		3470		NA		NA	
Mercury	0.1	µg/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	UJ
Molybdenum	5.6	µg/L	9.77		5.93		3.89		13.3		9.23		8.9		8.37	
Nickel	7.4	µg/L	6.66		8.4		16.6		4.27		4.59		4.15		2.99	
Potassium	40552	µg/L	NA				NA		28000		61000		NA		NA	
Selenium	1.9	µg/L	1	U	0.618	J	1.44		0.807	J	2.29		2.18		1.5	
Silver	1.6	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Sodium	937369	µg/L	NA		NA		NA		111000		466000		NA		NA	
Thallium	2.3	µg/L	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Vanadium	8.4	µg/L	0.604	J	1.1		2.69		3.2		9.76		1.17		1.81	
Zinc	10.5	µg/L	8.82	J	5.19	J	5.64	J	5.81	J	10.9		10	U	10	U
General Chemistry																
Carbon, Total Organic	--	mg/L	NA		NA		NA		NA		NA		NA		NA	
Chloride	--	mg/L	NA		NA		NA		NA		NA		NA		NA	
Cyanide, Total	--	mg/L	NA		NA		NA		NA		NA		NA		NA	
Sulfate	--	mg/L	NA		NA		NA		NA		NA		NA		199	
Total Alkalinity	--	mg/L	NA		NA		NA		NA		NA		NA		NA	
Total Dissolved Solids	--	mg/L	NA		NA		NA		NA		NA		NA		NA	

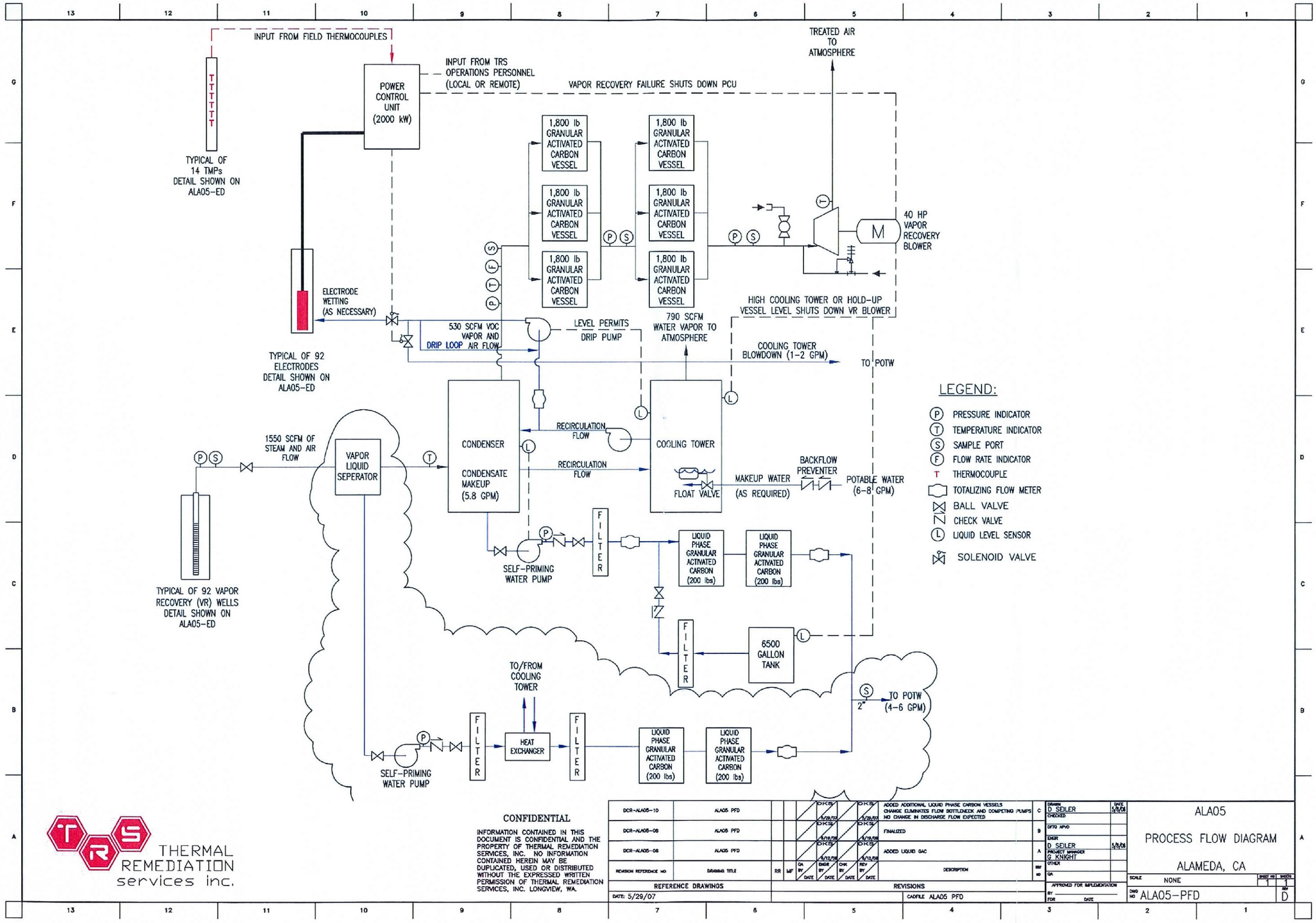
Table 7

Summary of Additional System Design Investigation Groundwater Sample Results

Table 7 Notes

[1] Alameda background metals concentrations from:
Summary of Background Concentrations in Soil and Groundwater, Alameda Point, Alameda California, Tetra Tech EM Inc., Nobember 2001
J denotes estimated value.
mg/L denotes milligrams per liter.
NA denotes not analyzed.
U denotes not detected at or above the stated reporting limit.
UJ denotes estimated reporting limit.
µg/L denotes micrograms per liter.

Appendix A
TRS Process Equipment Schematic, Construction Drawings and Summary Details for Electrodes, Temperature Monitoring Points, Vapor Piezometers



THERMAL REMEDIATION services inc.

REFERENCE DRAWINGS		REVISIONS													
DCR-ALA05-10	ALA05 PFD				DKS 5/29/07		DKS 5/29/07	ADDED ADDITIONAL LIQUID PHASE CARBON VESSELS CHANGE ELIMINATES FLOW BOTTLENECK AND COMPETING PUMPS NO CHANGE IN DISCHARGE FLOW EXPECTED	C						
DCR-ALA05-08	ALA05 PFD				DKS 5/18/06		DKS 5/19/06	FINALIZED	B						
DCR-ALA05-06	ALA05 PFD				DKS 5/12/06		DKS 5/12/06	ADDED LIQUID GAC	A						
REVISION REFERENCE NO	DRAWING TITLE	RR	MF	QA BY / DATE	ENGR BY / DATE	CHK BY / DATE	REV BY / DATE	DESCRIPTION	REV NO						

DATE: 5/29/07

CADFILE ALA05 PFD

DRAWN	D SEILER	DATE	5/8/06
CHECKED			
DFTG APVD			
ENGR	D SEILER		5/8/06
PROJECT MANAGER	G KNIGHT		
OTHER			
QA			
APPROVED FOR IMPLEMENTATION			
BY			
FOR		DATE	

ALA05

PROCESS FLOW DIAGRAM

ALAMEDA, CA

SCALE: NONE

SHEET NO: 1 SHEETS: 1

DWG NO: ALA05-PFD

REV: D

Electrode Construction Summary

Project:	ALA05
REGION 1 (20 Electrodes)	
Date Completed	Electrode	Total Depth
Not Installed	C5	
6/22/2006	C6	41
6/22/2006	C7	41
6/26/2006	D4	41
6/21/2006	D5	41
7/9/2006	D6	41
7/9/2006	D7	41
7/9/2006	D8	41
7/8/2006	E4	41
6/21/2006	E5	41
6/15/2006	E6	41
7/10/2006	E7	41
6/2/2006	E8	41
6/23/2006	E9	41
6/20/2006	F4	41
6/20/2006	F5	41
6/16/2006	F6	41
6/1/2006	F7	41
7/8/2006	F8	41
6/15/2006	G5	41
REGION 1 AVERAGES:		41

REGION 2 (13 Electrodes)		
Date Completed	Electrode	Total Depth
6/1/2006	F9	30.25
6/23/2006	F10	30
6/1/2006	G9	30.25
5/23/2006	G10	30
6/22/2006	G11	30
6/2/2006	H10	30.5
5/30/2006	H11	30
6/3/2006	J11	30.5
6/29/2006	J12	30
9/8/2006	K12	30
9/7/2006	K13	30.25
9/18/2006	L13	30
9/7/2006	L14	30
REGION 2 AVERAGES:		30.1

REGION 3 (8 Electrodes)		
Date Completed	Electrode	Total Depth
9/13/2006	M14	19
6/5/2006	N14	19
6/3/2006	N15	19.5
6/4/2006	P14	19
6/3/2006	P15	19
6/4/2006	Q15	19.5
6/3/2006	Q16	19.5
6/4/2006	R16	19.5
REGION 3 AVERAGES:		19.3

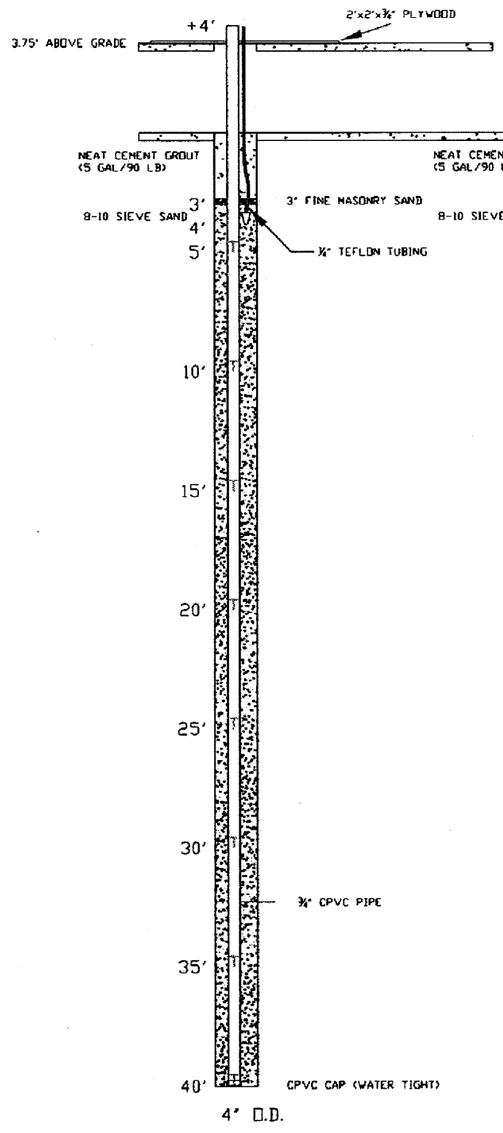
REGION 4 (28 Electrodes)		
Date Completed	Electrode	Total Depth
5/30/2006	G6	45
7/7/2006	G7	45
7/8/2006	G8	45
7/7/2006	H6	45
5/25/2006	H7	45
5/26/2006	H8	45.5
6/29/2006	H9	45
5/25/2006	J7	45.5
5/31/2006	J8	45.5
6/29/2006	J9	45
6/4/2006	J10	45.5
6/29/2006	K8	45
6/6/2006	K9	45.5
6/5/2006	K10	45
6/4/2006	K11	45.5
5/24/2006	L9	45
6/5/2006	L10	45
9/8/2006	L11	45
9/15/2006	L12	45
9/12/2006	M10	45
9/13/2006	M11	45
9/14/2006	M12	45
9/19/2006	M13	45
9/11/2006	N11	45
9/12/2006	N12	45
9/14/2006	N13	45
9/11/2006	P12	45
9/13/2006	P13	45
REGION 4 AVERAGES:		45.1

REGION 5 (23 Electrodes)		
Date Completed	Electrode	Total Depth
6/27/2006	E3	36
6/16/2006	F3	41
6/19/2006	G3	36
6/19/2005	G4	36'
6/16/2006	H4	36
6/16/2006	H5	36
6/27/2006	J5	36
6/1/2006	J6	36
6/16/2006	K6	36
6/1/2006	K7	36
6/2/2006	L7	36
6/1/2006	L8	36
6/6/2006	M9	36
6/6/2006	N10	36
6/13/2006	P11	36
6/12/2006	Q12	36
6/13/2006	Q13	36
6/14/2006	Q14	36
6/6/2006	R13	36
6/13/2006	R14	36
6/14/2006	R15	36
6/15/2006	S15	36
6/15/2006	S16	36
REGION 5 AVERAGES:		36.2

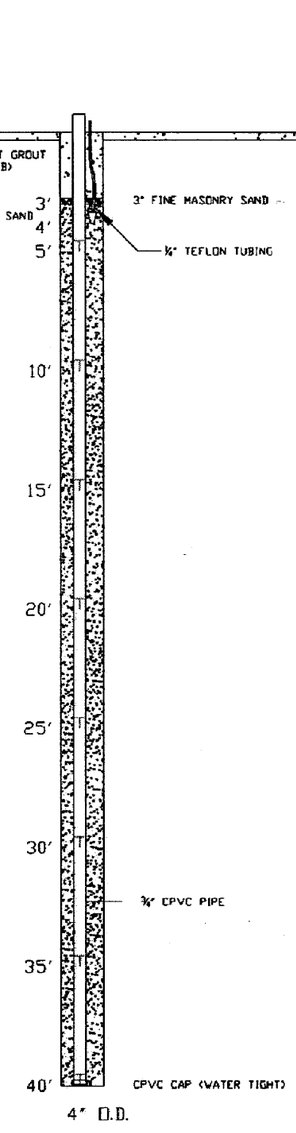
Date Completed	MW	Screen Interval
6/6/2006	MW 4-2-14	6' - 11'
6/6/2006	MW 4-2-17	26' - 31'
6/7/2006	MW 4-2-15	26' - 31'
6/12/2006	MW 4-2-9	13' - 18'
6/12/2006	MW 4-2-8	15' - 20'
6/26/2006	MW 4-2-13	35' - 40'
6/27/2006	MW 4-2-11	5' - 10'
7/7/2006	MW 4-2-16	9' - 14'
7/7/2006	MW 4-2-10	25' - 30'
7/8/2006	MW 4-2-4	25' -30'
7/8/2006	MW 4-2-6	15' 20'
7/9/2006	MW 4-2-7	26' - 31'
7/10/2006	MW 4-2-3	30' - 35'
7/11/2006	MW 4-2-5	32' - 37'
7/12/2006	MW 4-2-1	20' - 25'
7/12/2006	MW 4-2-2	31' - 36'
7/12/2006	MW 4-2-12	26' - 31'

Date Completed	TMP	Total Depth
6/13/2006	G07	45.0
6/15/2006	P11	35.0
6/15/2006	P15	19.0
6/13/2006	H10	29.0
6/14/2006	K08	45.0
6/14/2006	J05	35.0
6/16/2006	C07	40.0
6/16/2006	D04	40.0
6/15/2006	Q13	35.0
6/16/2006	M12	45.0
6/23/2006	F03	40.0
6/23/2006	F04	35.0
6/30/2006	E07	40
9/7/2006	K11	4

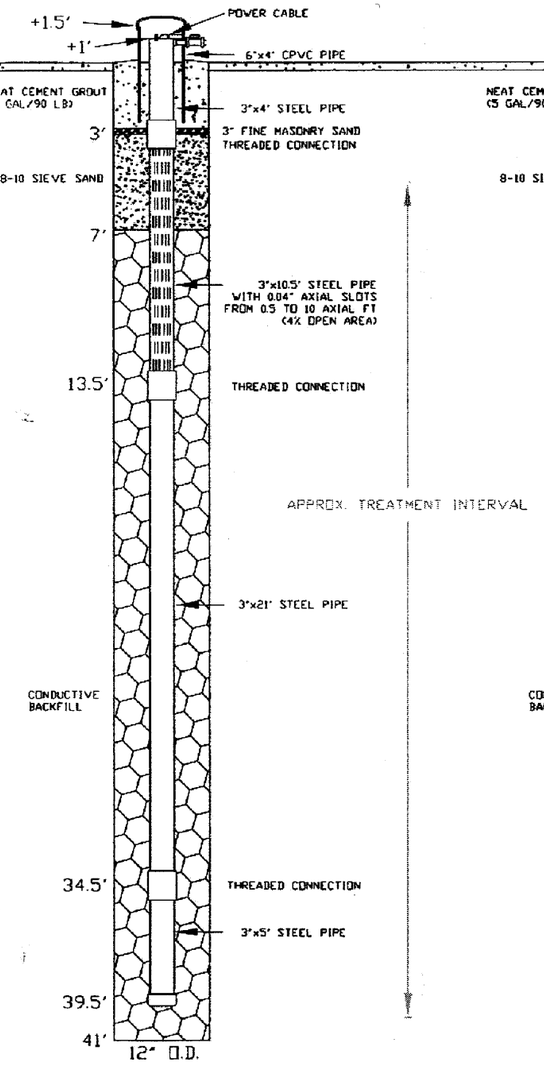
TEMPERATURE MONITORING POINT (TMP) REGION 1 INSIDE E07



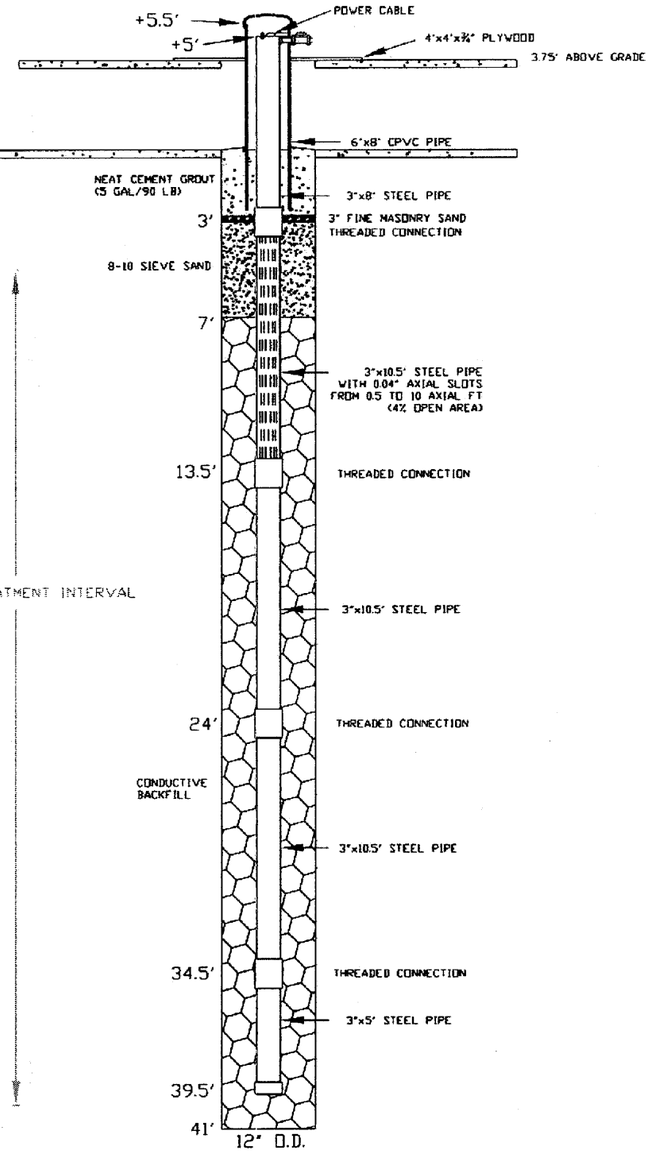
TEMPERATURE MONITORING POINT (TMP) REGION 1 OUTSIDE C07; D04; F04



ELECTRODE AND VAPOR RECOVERY WELL REGION 1 OUTDOORS TYPICAL OF 17



ELECTRODE AND VAPOR RECOVERY WELL REGION 1 INDOORS TYPICAL OF 3



THERMAL REMEDIATION services inc.

CONFIDENTIAL

REVISION REFERENCE NO	DRAWING TITLE	RR	MF	CA BY / DATE	ENGR BY / DATE	CHK BY / DATE	REV BY / DATE	DESCRIPTION	REV NO
OCR-ALA05-08	ALA05-ED-01				DKS 8/20/08	DKS 8/20/08		SEPERATED TMP AND MW ADDED MW SHEET	D
OCR-ALA05-04	ALA05-ED-01				DKS 5/12/08	DKS 5/12/08		ADDED MW AND TMP COMPLETION INFO	C
OCR-ALA05-03	ALA05-ED-01				DKS 5/1/08	DKS 5/1/08		ADD SHEET 6 ELECTRODE HEAD DETAIL MODIFIED TO ACCOMODATE SITE VISIT INFORMATION	B

REFERENCE DRAWINGS — DATE: 6-20-06

REVISIONS — CADFILE ALA05 ED

DRAWN: DK SEILER — DATE: 6-16-16
CHECKED: DPTC APVD
ENGR: DK SEILER — 6-16-16
PROJECT MANAGER: G. KNIGHT
OTHER
CA
APPROVED FOR IMPLEMENTATION
BY _____ FOR _____ DATE

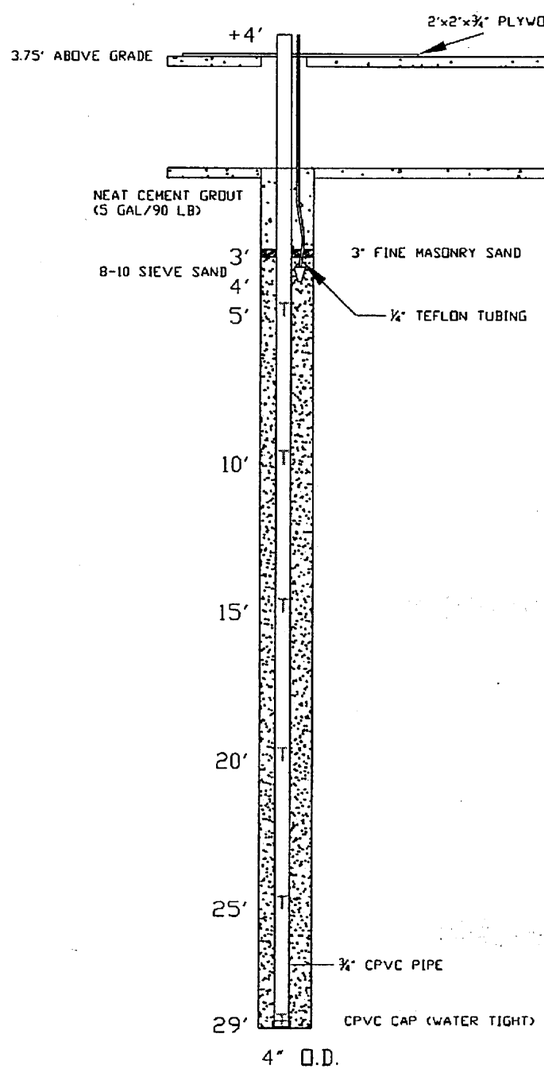
ALA05 REGION 1 ELECTRODE DETAIL

ALAMEDA, CA

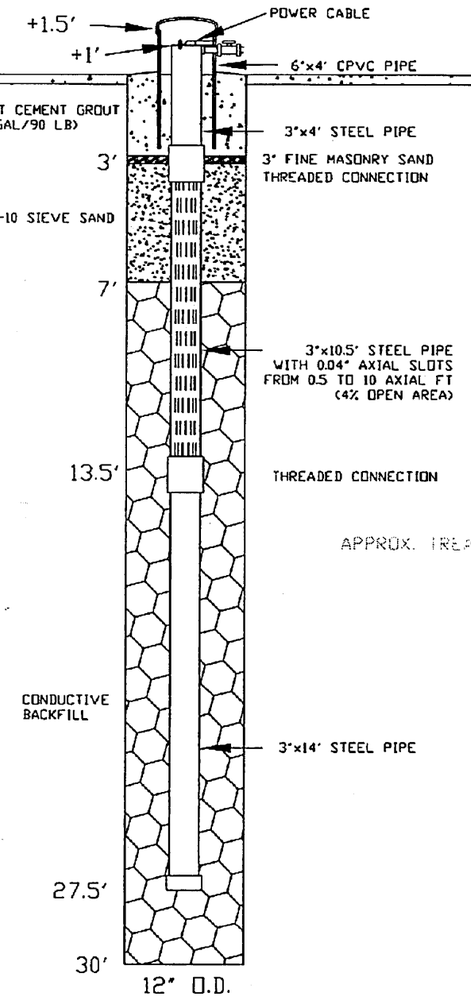
SCALE: NONE — SHEET NO: 1 — SHEETS: 6

DWG NO: ALA05-ED-01 — REV NO: E

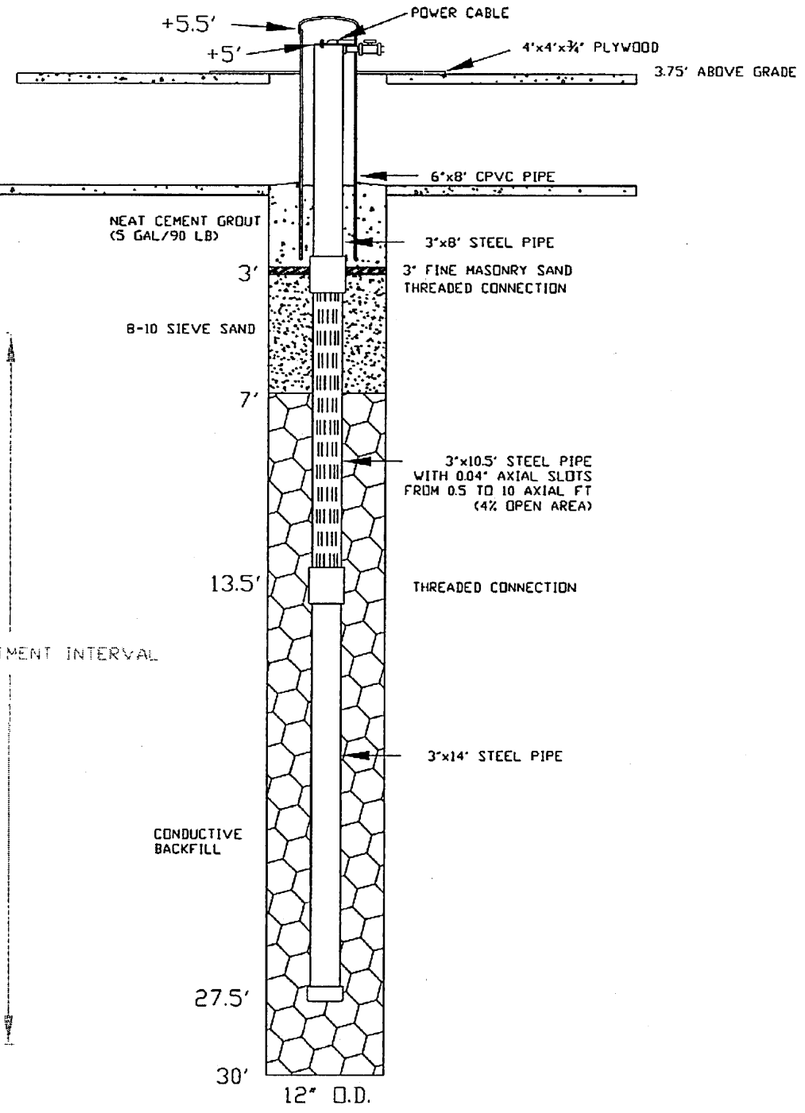
TEMPERATURE MONITORING POINT (TMP) REGION 2 INSIDE H10



ELECTRODE AND VAPOR RECOVERY WELL REGION 2 OUTDOORS TYPICAL OF 2



ELECTRODE AND VAPOR RECOVERY WELL REGION 2 INDOORS TYPICAL OF 11



THERMAL REMEDIATION services inc.

DCR-ALA05-08	ALA05-ED-02							SEPERATED TMP AND MW ADDED MW SHEET	D
REVISION REFERENCE NO	DRAWING TITLE	RR BY	MF DATE	QA BY	DATE	ENGR BY	DATE	CHK BY	DATE	REV BY	DATE	DESCRIPTION	REV NO
REFERENCE DRAWINGS						REVISIONS							
DATE 6-20-06						CADFILE ALA05 ED							

DRAWN	DK SEILER — DATE 6-16-06
CHECKED	
DFTG APVD	
ENGR	DK SEILER — 6-16-06
PROJECT MANAGER	G KNIGHT
OTHER	
QA	
APPROVED FOR IMPLEMENTATION	BY ____ FOR ____ DATE ____

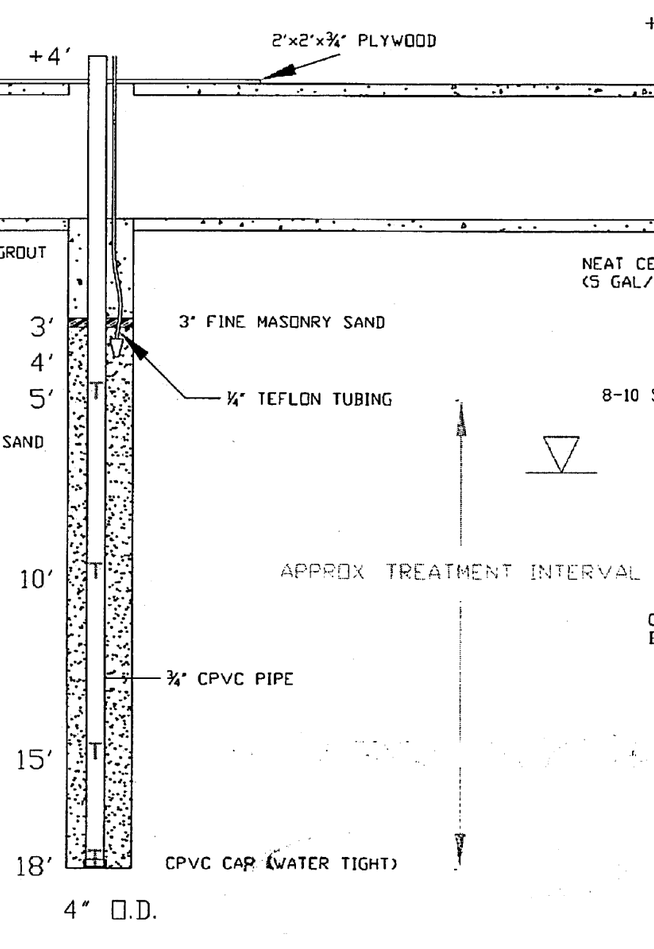
ALA05
REGION 2
ELECTRODE DETAIL

ALAMEDA, CA

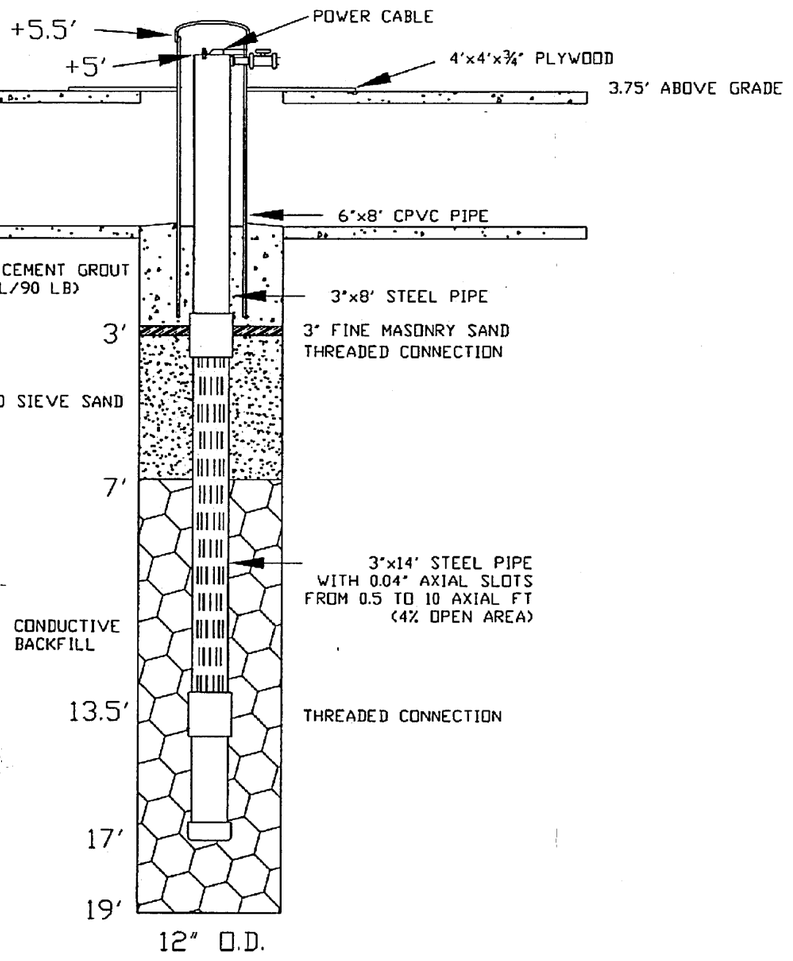
SCALE	SHEET NO	SHEETS
NONE	2	6

DWG NO ALA05-ED-02 — REV NO E

TEMPERATURE MONITORING POINT (TMP) REGION 3 INSIDE P15



ELECTRODE AND VAPOR RECOVERY WELL REGION 3 INDOORS TYPICAL OF 8



THERMAL REMEDIATION services inc.

DCR-ALA05-08	ALA05-ED-03							D	DRAWN DK SEILER	DATE 4-15-08
				DKS 4/15/08		DKS 4/29/08	SEPERATED TMP AND MW ADDED MW SHEET		CHECKED	
									DTSC APVD	
									ENGR DK SEILER	4-15-08
REVISION REFERENCE NO	DRAWING TITLE	RR	INF	ORIGINATOR BY / DATE	ENGR BY / DATE	CHK BY / DATE	REV BY / DATE	DESCRIPTION	REV NO	PROJECT MANAGER G KNIGHT
										OTHER
										QA
REFERENCE DRAWINGS		REVISIONS								APPROVED FOR IMPLEMENTATION
DATE 6-20-05		CADFILE ALA05 ED								BY FOR DATE

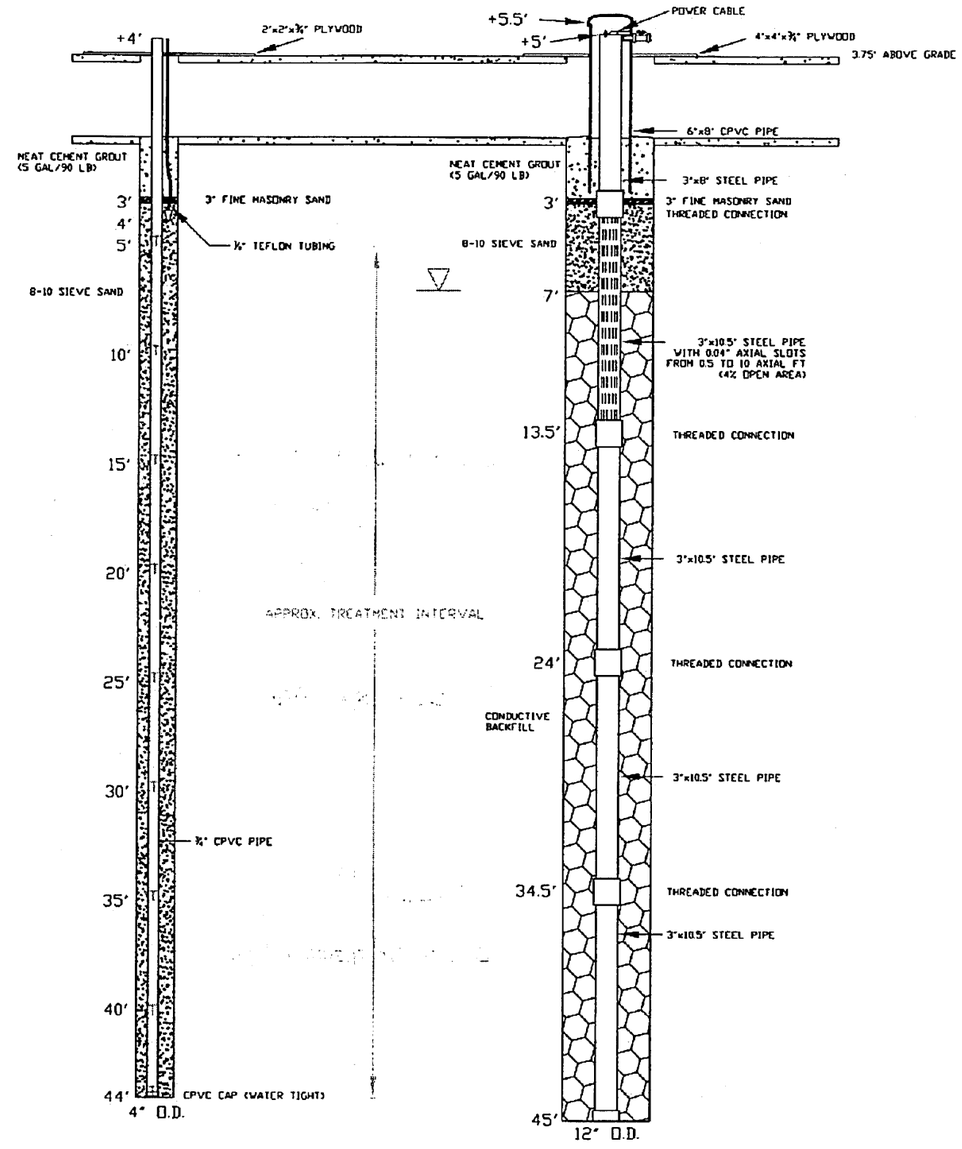
ALA05
REGION 3
ELECTRODE DETAIL

ALAMEDA, CA

SCALE	NONE	SHEET NO	3	SHEETS	6
DWG NO	ALA05-ED-03	REV	E		

TEMPERATURE MONITORING
POINT (TMP)
REGION 4 INSIDE
G07; K08; K11; M12

ELECTRODE AND VAPOR
RECOVERY WELL
REGION 4 INDOORS
TYPICAL OF 28



THERMAL REMEDIATION services inc.

DCR-ALA05-08	ALA05-ED-04							SEPERATED TMP AND MW ADDED MW SHEET	D
REVISION REFERENCE NO	DRAWING TITLE	RR	MF	QA BY / DATE	ENGR BY / DATE	CHK BY / DATE	REV BY / DATE	DESCRIPTION	REV NO

REFERENCE DRAWINGS
DATE 6-20-06

REVISIONS
CADFILE ALA05 ED

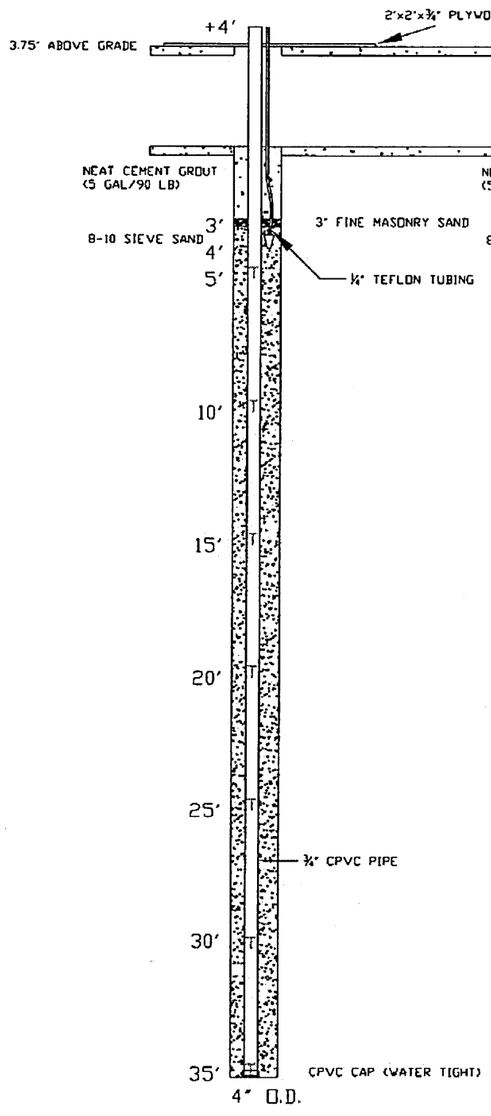
DRAWN	DK SEILER	DATE 1-15-16
CHECKED		
QTRLY APVD		
ENGR	DK SEILER	1-15-16
PROJECT MANAGER	C KNIGHT	
OTHER		
QA		
APPROVED FOR IMPLEMENTATION		
BY		
FOR	DATE	

ALA05
REGION 4
ELECTRODE DETAIL

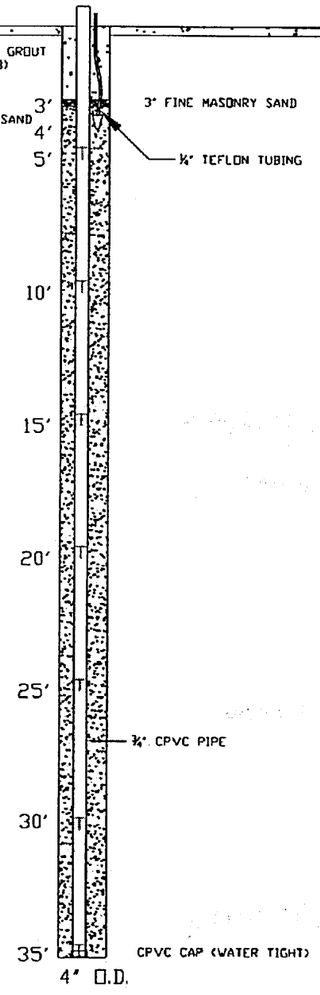
ALAMEDA, CA

SCALE	NONE	SHEET NO	4	OF	6
DWG NO	ALA05-ED-04	REV	E		

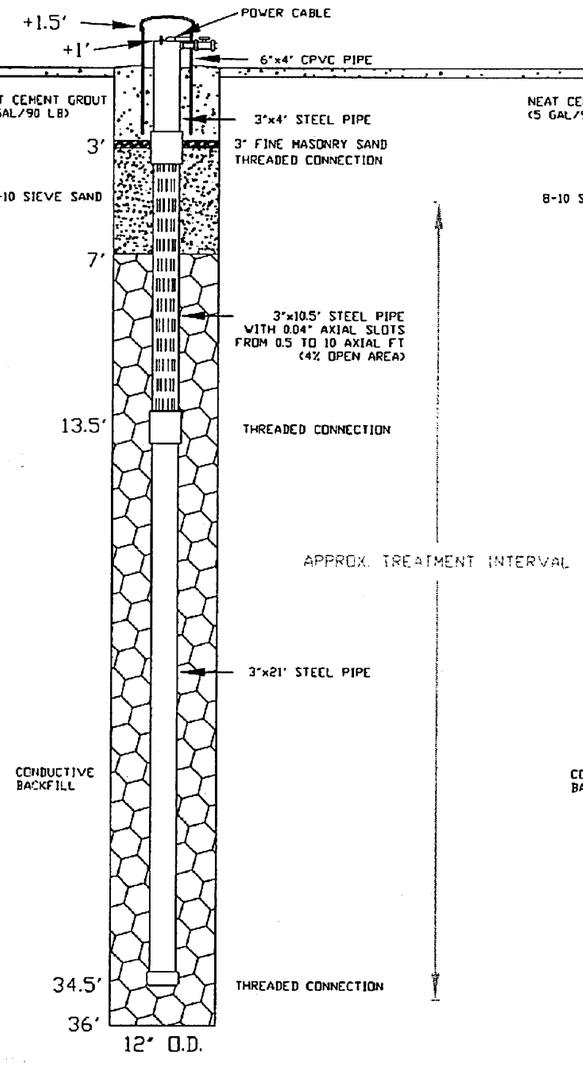
TEMPERATURE MONITORING POINT (TMP) REGION 5 INSIDE P11; Q13



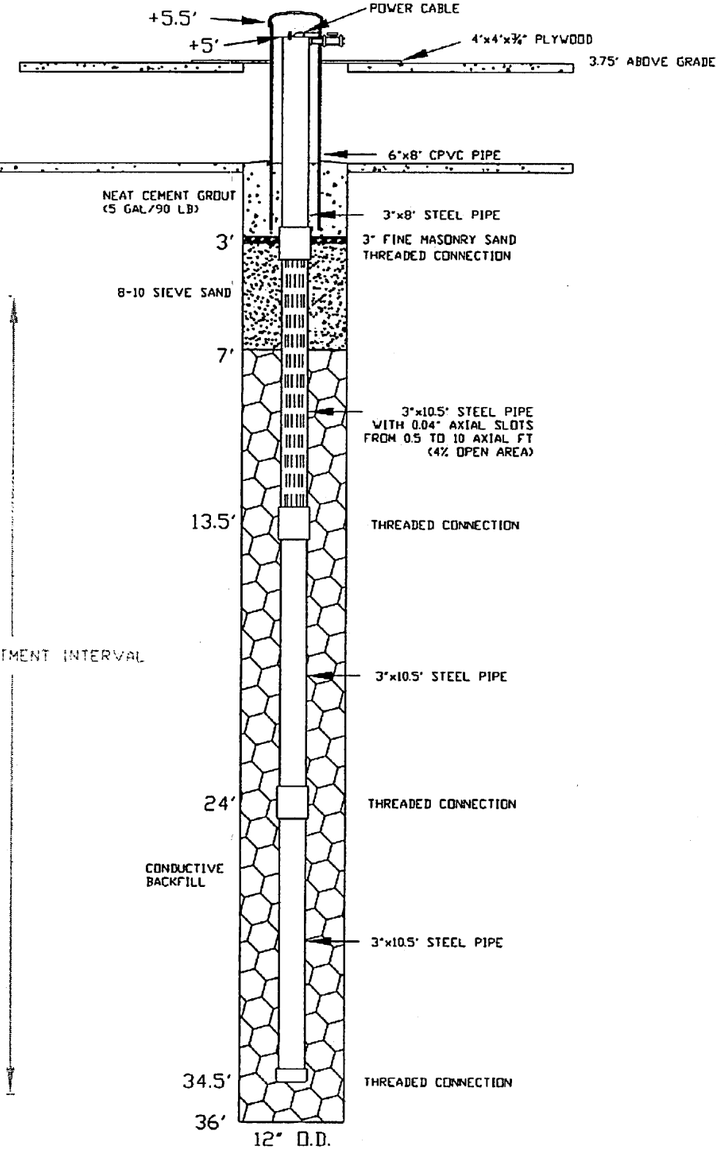
TEMPERATURE MONITORING POINT (TMP) REGION 5 OUTSIDE F03; J05



ELECTRODE AND VAPOR RECOVERY WELL REGION 5 OUTDOORS TYPICAL OF 12



ELECTRODE AND VAPOR RECOVERY WELL REGION 5 INDOORS TYPICAL OF 11



THERMAL REMEDIATION services inc.

DCR-ALA05-08	ALA05-ED-05							SEPERATED TMP AND MW ADDED MW SHEET	D
REVISION REFERENCE NO	DRAWING TITLE	RR	MF	QA BY / DATE	ENGR BY / DATE	CHK BY / DATE	REV BY / DATE	DESCRIPTION	REV NO

REFERENCE DRAWINGS
DATE 6-20-05

REVISIONS
CADFILE ALA05 ED

DRAWN	DK SEILER	1-16-06
CHECKED		
QA/QC APVD		
ENGR	DK SEILER	1-16-06
PROJECT MANAGER	G KNIGHT	
OTHER		
QA		

APPROVED FOR IMPLEMENTATION
BY _____
FOR DATE

ALA05 REGION 5 ELECTRODE DETAIL

ALAMEDA, CA

SCALE NONE | SHEET NO 5 | SHEETS 5

DWG NO ALA05-ED-05

Appendix B
Building Floor Survey for Utility Clearance

THIS ORIGINAL MAP WAS PRODUCED FROM A COMPUTER GENERATED CADD FILE, AND SAID CADD FILE MEETS NATIONAL MAP ACCURACY STANDARDS AT THE SCALE INDICATED HEREON. PLEASE REFER TO THIS ORIGINAL FOR ANY CHANGES TO THE CADD FILE WHICH MAY HAVE BEEN MADE WITHOUT THE KNOWLEDGE OF RONALD GREENWELL AND ASSOCIATES, INC.

AS-BUILT SURVEY MAP

OF

BUILDING 360
ALAMEDA NAVAL STATION
ALAMEDA, CA

FOR

SHAW ENVIRONMENTAL

BY

RONALD GREENWELL AND ASSOCIATES, INC.
ANTIOCH CALIFORNIA
SCALE: 1"=10' JUNE 28, 2006

PLATING TANK AREA

PLATING TANK AREA

BUILDING NORTH

GRAPHIC SCALE

10' 5' 0' 10' 20'

NOTES:

1.) EACH 1.1' DIAMETER PIER HAS A TOP CAP HAVING A DIAMETER OF 4' (2'RAD) UNLESS OTHERWISE SHOWN. CONTRACTOR SHALL MAINTAIN A MINIMUM 3' RADIUS CLEARANCE FROM ALL TOP CAPPED PIERS SHOWN.

2.) CONTRACTORS TO MAINTAIN 1' MINIMUM CLEARANCE FROM ALL THICKENED SLABS AND FOUNDATION WALLS SHOWN.

3.) HORIZONTAL AND VERTICAL MEASUREMENTS ARE BASED UPON ASSUMED LOCAL BUILDING SYSTEM.

SURVEYOR'S STATEMENT

THIS MAP CORRECTLY REPRESENTS A SURVEY PERFORMED BY ME OR UNDER MY DIRECTION.

PROFESSIONAL LAND SURVEYOR
DONALD M. ARNAUD
EXPIRES: 12/31/
Lic. No. 8025
STATE OF CALIFORNIA

DONALD M. ARNAUD PLS 8025
LIC. EXPIRES 12/31/06

W.O. 1369.12

SHEET 1 OF 1

Appendix C
Monitoring Well Construction As-Builts

Drilling Log

Monitoring Well **MW4-2-1**

Project *Alameda Pt CTO 133* Owner *US Navy*

Location *Alameda, CA* Proj. No. *108816*

Surface Elev. (msl) *13.14 ft.* Total Hole Depth *27.0 ft.* North *470459* East *1481805*

Top of Casing *NA* Water Level Initial ▽ *10.0 ft.* Static *NA* Diameter *8 in.*

Screen: Dia *2 in.* Length *5 ft.* Type/Size *Sch 40 PVC/0.020 in.*

Casing: Dia *2 in.* Length *20 ft.* Type *Sch 5, Type 304, Stainless Steel*

Fill Material *See Comments* Rig/Core *Limited Access CME-75*

Drill Co. *WDC Exploration & Wells* Method *Hollow Stem Auger*

Driller *R. McGahey/A. Vasquez* Log By *Garrick Anderson, CPG* Date *7/12/06* Permit # *W2006-0441*

Checked By *Eugene Mullenmeister, PG* C57 License No. *283326*

COMMENTS

Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

Surface elevation reflects surveyed raised floor.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
							Depths are below ground level.
0							Initial hole cleared for utilities to five feet with air-knife and backfilled with air-knifed cuttings. Cuttings above 8 feet not described due to no sample returns to surface.
2							
4							
6							
8							POORLY GRADED SAND; very dark grayish brown (2.5Y 3/2); fine grained with 5-10% medium grains; moist to very moist
10 ▽							
12						SP	Becomes dark grayish brown (2.5Y 4/2). Loose, fine grained, 1% medium grains, trace silt, wet.
14							

Continued Next Page

Drilling Log

Monitoring Well **MW4-2-1**

Project *Alameda Pt CTO 133* Owner *US Navy*

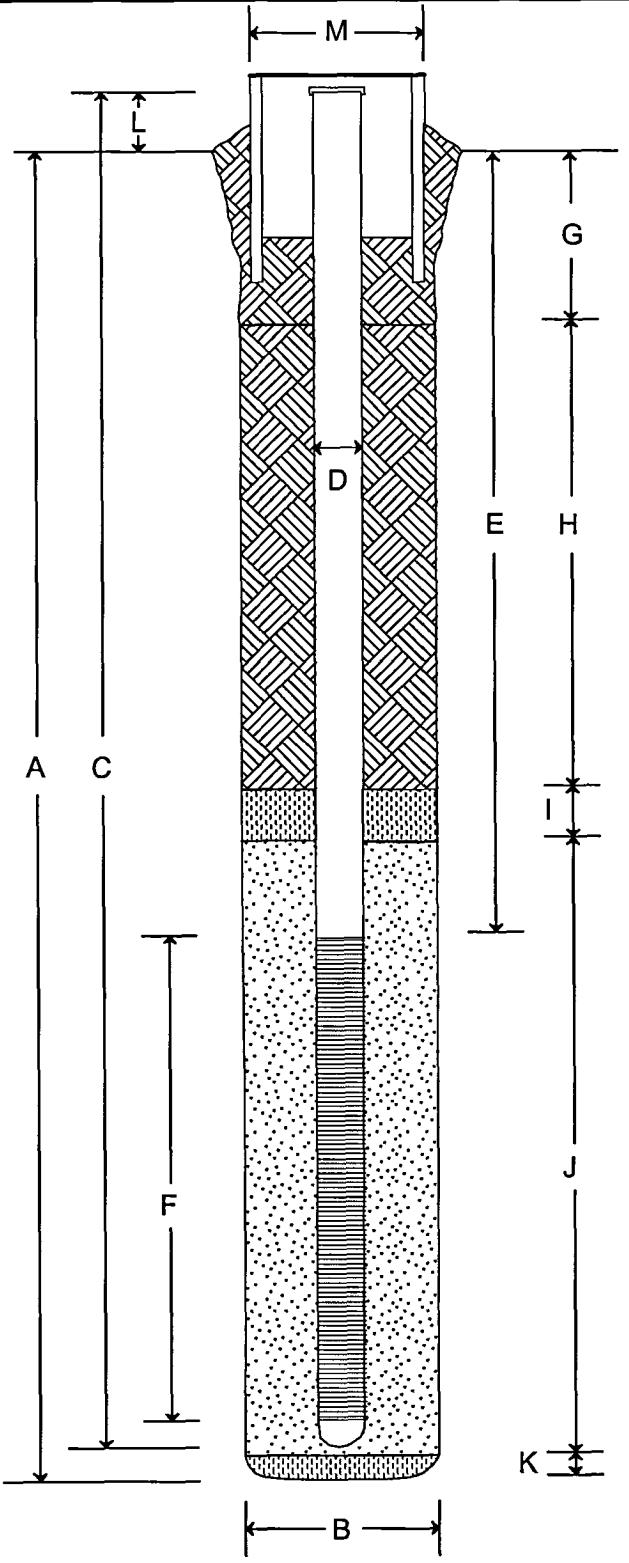
Location *Alameda, CA* Proj. No. *108816*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery / Blow Count Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
16						*Continued* POORLY GRADED SAND; dark grayish brown (2.5Y 4/2); fine grained with trace medium grains; trace silt; wet
					SP	
18						POORLY GRADED SAND WITH SILT; olive brown (2.5Y 4/4); loose; fine grained; 10-15% silt; wet
20					SP-SM	
22						POORLY GRADED SAND; olive brown (2.5Y 4/2); fine grained with trace medium grains; trace silt; wet
24					SP	
26						
28						TD=27 ft
30						
32						
34						

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0441

BORING/WELL NO.: MW4-2-1
TOP OF CASING ELEV.: n/a (MSL)
GROUND SURFACE ELEV.: 13.14 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth	27	ft.
B. Boring Diameter	8	in.
Drilling Method	Hollow Stem Auger	

WELL CONSTRUCTION

C. Casing Length (BGL)	25	ft.
Material	Sch 5, Type 304, Stainless Steel	
D. Casing Diameter	2	in.
E. Depth to Top of Screen	20	ft.
F. Screen Length	5	ft.
Slotted Interval from	20 to 25	ft.
Slot Type	continuous wrap SS	
Slot Size	0.020	in.
G. Surface Seal	--	ft.
Seal Material	n/a	
H. Annular Seal	17	ft.
Seal Material	Baselite I-II-V cement	
I. Transition Sand	1	ft.
Transition Material	RMC Pacific #60 sand	
J. Filter Pack	9	ft.
Material	RMC Pacific-Lapis Lustre # 2/16 sand	
K. Backfill	--	ft.
Material	n/a	
L. Top of Casing Height	n/a	ft.
M. Protective Cover Diameter	4	in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-2**

Project: Alameda Pt CTO 133 | Owner: US Navy
Location: Alameda, CA | Proj. No.: 108816
Surface Elev. (msl): 13.05 ft. | Total Hole Depth: 37.0 ft. | North: 470456 | East: 1481801
Top of Casing: NA | Water Level Initial: ▽ 10.0 ft. | Static: NA | Diameter: 8 in.
Screen: Dia 2 in. | Length: 5 ft. | Type/Size: Sch 40 PVC/0.020 in.
Casing: Dia 2 in. | Length: 31 ft. | Type: Sch 5, Type 304, Stainless Steel
Fill Material: See Comments | Rig/Core: Limited Access CME-25
Drill Co.: WDC Exploration & Wells | Method: Hollow Stem Auger
Driller: R. McGahey/A. Vasquez | Log By: Garrick Anderson, CPG | Date: 7/12/06 | Permit #: W2006-0449
Checked By: Eugene Mullenmeister, PG | C57 License No.: 283326

COMMENTS
Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

Surface elevation reflects surveyed ground level

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery / Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
						Depths are below ground level.
0						Initial hole cleared for utilities to five feet with air-knife and backfilled with air-knifed cuttings. Cuttings above 10 feet not described due to no sample returns to surface.
10 ▽		0.0			SM	SILTY SAND; dark grayish brown (2.5Y 4/2); 15-20% silt; fine grained sand, 5% medium grained; loose; very wet
12		0.0			SP-SM	POORLY GRADED SAND WITH SILT; decreased silt to 10-15%; very wet
18					SM	SILTY SAND; dark grayish brown (2/5Y 4/2); 25-30% silt; 70-75% fine grained sand; wet/soupy
24						Continued Next Page

Drilling Log

Monitoring Well **MW4-2-2**

Project *Alameda Pt CTO 133* Owner *US Navy*

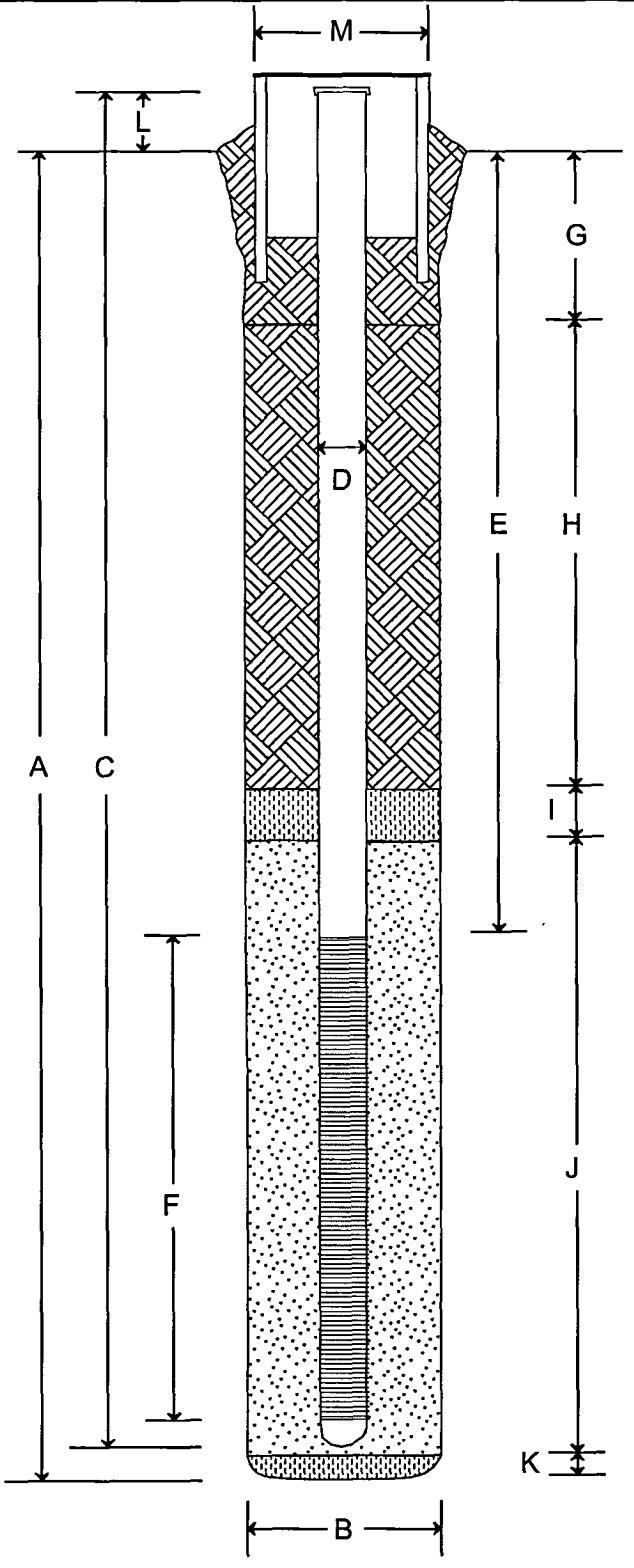
Location *Alameda, CA* Proj. No. *108816*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery / Blow Count Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
26						*Continued* POORLY GRADED SAND WITH SILT; dark olive brown (2.5Y 3/3); fine grained with trace medium grains; 10-15% silt; very wet
28		1.8			SP-SM	
30						SILTY SAND; dark grayish brown (2.5Y 4/2); 20-25% silt; very wet/soupy
32					SM	
34						
36						25-30% silt and soupy at 35 feet.
38					SP-SM	POORLY GRADED SAND WITH SILT; olive brown (2.5Y 4/3); fine sand; loose; saturated/soupy
40						TD=37 ft
42						
44						
46						
48						
50						
52						
54						
56						
58						

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0449

BORING/WELL NO.: MW4-2-2
TOP OF CASING ELEV.: n/a (MSL)
GROUND SURFACE ELEV.: 13.05 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth	37	ft.
B. Boring Diameter	8	in.
Drilling Method	Hollow Stem Auger	

WELL CONSTRUCTION

C. Casing Length (BGL)	36	ft.
Material	Sch 5, Type 304, Stainless Steel	
D. Casing Diameter	2	in.
E. Depth to Top of Screen	31	ft.
F. Screen Length	5	ft.
Slotted Interval from	31 to 36	ft.
Slot Type	continuous wrap SS	
Slot Size	0.020	in.
G. Surface Seal	--	ft.
Seal Material	n/a	
H. Annular Seal	28	ft.
Seal Material	Baselite I-II-V cement	
I. Transition Sand	1	ft.
Transition Material	RMC Pacific #60 sand	
J. Filter Pack	7	ft.
Material	RMC Pacific-Lapis Lustre # 2/16 sand	
K. Backfill	--	ft.
Material	n/a	
L. Top of Casing Height	n/a	ft.
M. Protective Cover Diameter	4	in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-3**

Project: Alameda Pt CTO 133 | Owner: US Navy
Location: Alameda, CA | Proj. No.: 108816
Surface Elev. (msl): 16.50 ft. | Total Hole Depth: 36.5 ft. | North: 470429 | East: 1481821
Top of Casing: NA | Water Level Initial: ▽ 10.0 ft. | Static: NA | Diameter: 8 in.
Screen: Dia: 2 in. | Length: 5 ft. | Type/Size: Sch 40 PVC/0.020 in.
Casing: Dia: 2 in. | Length: 30 ft. | Type: Sch 5, Type 304, Stainless Steel
Fill Material: See Comments | Rig/Core: Limited Access
Drill Co.: WDC Exploration & Wells | Method: Hollow Stem Auger
Driller: J. Zimmer/J. Trujillo | Log By: Garrick Anderson, CPG | Date: 7/10/06 | Permit #: W2006-0450
Checked By: Eugene Mullenmeister, PG | C57 License No.: 283326

COMMENTS
Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

Surface elevation value reflects surveyed raised floor.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
							Depths are below ground level.
0							Initial hole cleared for utilities to five feet with air-knife and backfilled with air-knifed cuttings. Cuttings above 10 feet not described due to no sample returns to surface.
10 ▽						SM	SILTY SAND; dark grayish brown (2.5Y 4/2); loose; 20-25% silt; 75-80% fine sand; wet
16						SP-SM	POORLY GRADED SAND WITH SILT; dark yellowish brown (10YR 4/4); 10% silt; loose; fine grained; wet
20						SP	POORLY GRADED SAND; light olive brown (2.5Y 5/4); loose; fine grained; wet

Continued Next Page

Drilling Log

Monitoring Well **MW4-2-3**

Project *Alameda Pt CTO 133* Owner *US Navy*

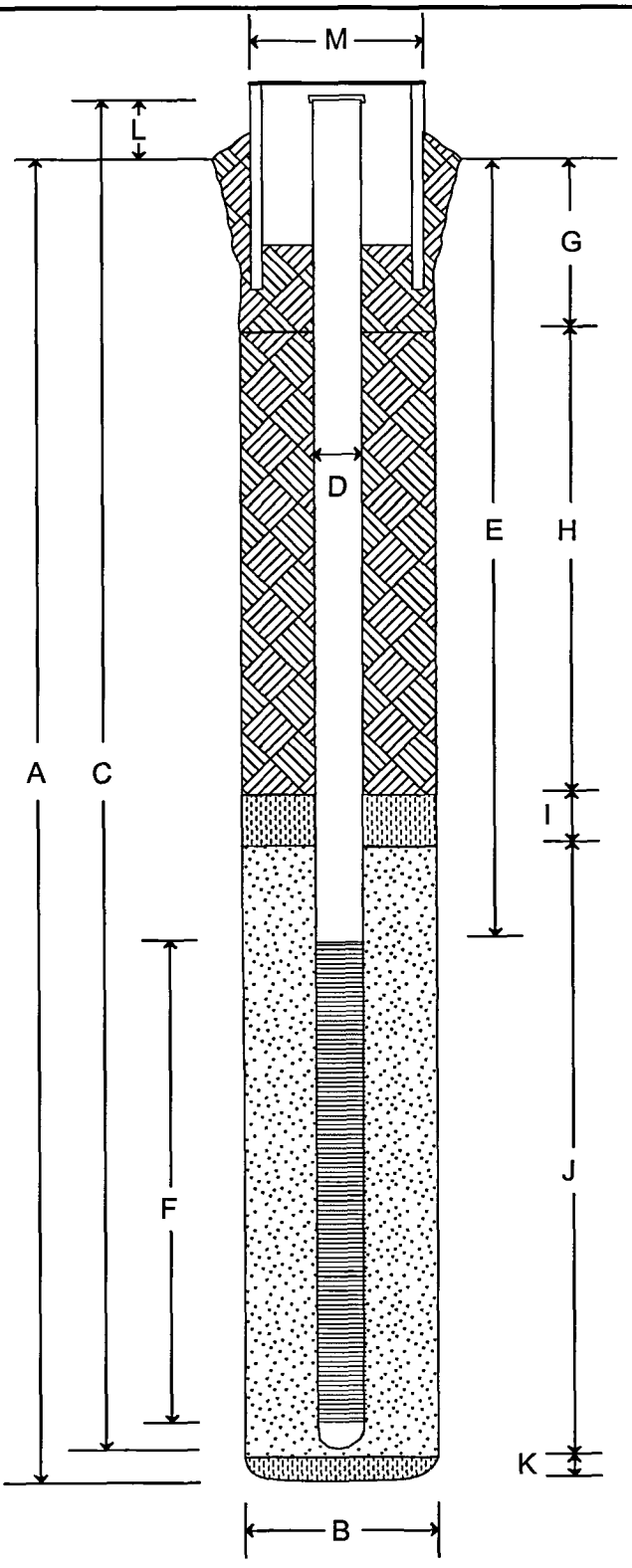
Location *Alameda, CA* Proj. No. *108816*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
							Continued
26						SP	POORLY GRADED SAND; light olive brown (2.5Y 5/4); loose; fine grained; wet Wet at 25 feet.
28						SP-SM	POORLY GRADED SAND WITH SILT; olive brown (2.5Y 4/4); 10% silt; loose; wet
30						SM	SILTY SAND; light olive brown (2.5Y 5/3); 20-30% silt; fine sand; loose; wet/saturated
32							
34							
36							TD=36.5 ft
38							
40							
42							
44							
46							
48							
50							
52							
54							
56							
58							

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0450

BORING/WELL NO.: MW4-2-3
TOP OF CASING ELEV.: n/a (MSL)
CEMENT FLOOR ELEV.: 16.50 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth: 36.5 ft.
B. Boring Diameter: 8 in.
Drilling Method: Hollow Stem Auger

WELL CONSTRUCTION

C. Casing Length (BGL): 35 ft.
Material: Sch 5, Type 304, Stainless Steel
D. Casing Diameter: 2 in.
E. Depth to Top of Screen: 30 ft.
F. Screen Length: 5 ft.
Slotted Interval from: 30 to 35 ft.
Slot Type: continuous wrap SS
Slot Size: 0.020 in.
G. Surface Seal: -- ft.
Seal Material: n/a
H. Annular Seal: 25 ft.
Seal Material: Baselite I-II-V cement
I. Transition Sand: 1 ft.
Transition Material: RMC Pacific #60 sand
J. Filter Pack: 10.5 ft.
Material: RMC Pacific-Lapis Lustre # 2/16 sand
K. Backfill: -- ft.
Material: n/a
L. Top of Casing Height: n/a ft.
M. Protective Cover Diameter: 4 in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-4**

Project *Alameda Pt CTO 133* Owner *US Navy*

Location *Alameda, CA* Proj. No. *108816*

Surface Elev. (msl) *12.75 ft.* Total Hole Depth *30.5 ft.* North *470373* East *1481785*

Top of Casing *13.92 ft.* Water Level Initial ▽ *5.2 ft.* Static *NA* Diameter *8 in.*

Screen: Dia *2 in.* Length *5 ft.* Type/Size *Sch 40 PVC/0.020 in.*

Casing: Dia *2 in.* Length *25.5 ft.* Type *Sch 5, Type 304, Stainless Steel*

Fill Material *See Comments* Rig/Core *Geoprobe 7730DT*

Drill Co. *WDC Exploration & Wells* Method *Hollow Stem Auger*

Driller *J. Zimmer/J. Trujillo* Log By *Joe Strack* Date *7/8/06* Permit # *W2006-0451*

Checked By *Eugene Mullenmeister, PG* C57 License No. *283326*

COMMENTS

Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

Surface elevation refers to surveyed ground level.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery / Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
						Depths are below ground level.
0						6" concrete surface. Initial hole cleared for utilities to five feet with air-knife and backfilled with air-knifed cuttings.
2						POORLY GRADED SAND WITH SILT; dark yellowish brown (10YR 4/2); 90% very fine sand; 10% silt; loose; noncohesive; damp
4					SP-SM	
▽						
6		0.0				Becomes moist at 6 feet; silt content increases.
8						SILTY SAND; moderate yellowish brown (10YR 5/4); 60% very fine sand; 40% "fines," nonplastic; saturated
10						
12						
14		0.0				At 15 feet, silt content decreases. Contains 80% very fine to fine sand, with trace coarser sand.
16					SM	
18						
20						
22						
24						

Continued Next Page

Drilling Log

Monitoring Well **MW4-2-4**

Project *Alameda Pt CTO 133* Owner *US Navy*

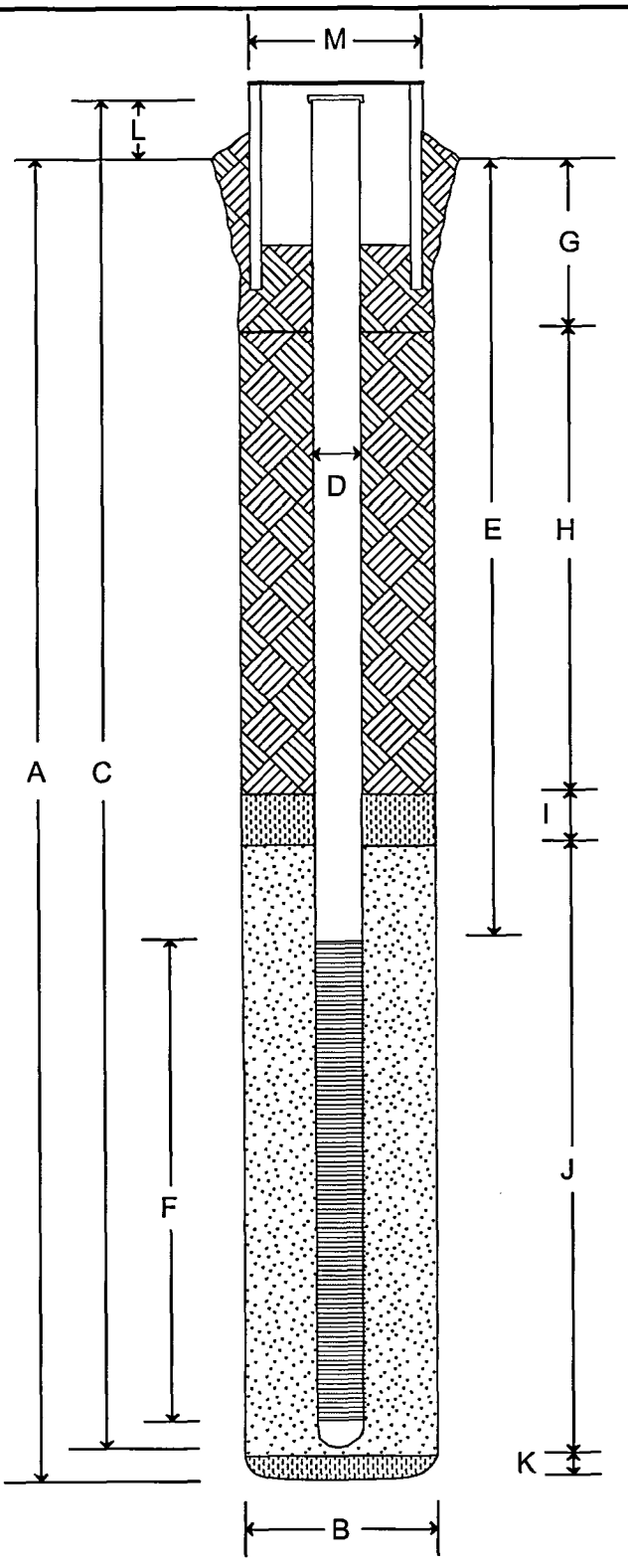
Location *Alameda, CA* Proj. No. *108816*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery / Blow Count Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
26		0.0			SM	*Continued* SILTY SAND; moderate yellowish brown (10YR 5/4); 80% very fine to fine sand; trace coarse sand; nonplastic; saturated Fewer cuttings returns due to soupy sand.
28					SP	POORLY GRADED SAND WITH SILT; 85% very fine to fine sand, 5% medium sand, trace coarse and very coarse sand, subrounded; 10% silt; wet
30						TD=30.5 ft
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						
58						

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0451

BORING/WELL NO.: MW4-2-4
TOP OF CASING ELEV.: 13.92 ft. (MSL)
GROUND SURFACE ELEV.: 12.75 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth: 30.5 ft.
B. Boring Diameter: 8 in.
Drilling Method: Hollow Stem Auger

WELL CONSTRUCTION

C. Casing Length: 31.67 ft.
Material: Sch 5, Type 304, Stainless Steel
D. Casing Diameter: 2 in.
E. Depth to Top of Screen: 25.5 ft.
F. Screen Length: 5 ft.
Slotted Interval from: 25.5 to 30.5 ft.
Slot Type: continuous wrap SS
Slot Size: 0.020 in.
G. Surface Seal: -- ft.
Seal Material: n/a
H. Annular Seal: 21 ft.
Seal Material: Baselite I-II-V cement
I. Transition Sand: 2.5 ft.
Transition Material: RMC Pacific #60 sand
J. Filter Pack: 7 ft.
Material: RMC Pacific-Lapis Lustre # 2/16 sand
K. Backfill: -- ft.
Material: n/a
L. Top of Casing Height: 1.17 ft.
M. Protective Cover Diameter: 4 in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-5**

Project *Alameda Pt CTO 133* Owner *US Navy*

Location *Alameda, CA* Proj. No. *108816*

Surface Elev. (msl) *12.85 ft.* Total Hole Depth *39.0 ft.* North *470375* East *1481788*

Top of Casing *NA* Water Level Initial ▽ *6.3 ft.* Static *NA* Diameter *8 in.*

Screen: Dia *2 in.* Length *5 ft.* Type/Size *Sch 40 PVC/0.020 in.*

Casing: Dia *2 in.* Length *32 ft.* Type *Sch 5, Type 304, Stainless Steel*

Fill Material *See Comments* Rig/Core *Geoprobe 7730DT*

Drill Co. *WDC Exploration & Wells* Method *Hollow Stem Auger*

Driller *J. Zimmer/J. Trujillo* Log By *J. Strack/G. Anderson, CPG* Date *7/11/06* Permit # *W2006-0452*

Checked By *Eugene Mullenmeister, PG* C57 License No. *283326*

COMMENTS

Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

Surface elevation refers to surveyed ground level.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
							Depths are below ground level.
0							6" concrete surface. Initial hole cleared for utilities to five feet with air-knife and backfilled with air-knifed cuttings.
2						SP-SM	POORLY GRADED SAND WITH SILT; dark yellowish brown (10YR 4/2); 90% very fine to fine sand; 10% silt; loose; noncohesive; damp to moist
4							
6 ▽							Becomes moderate yellowish brown (10YR 5/4) and wet near 6 feet.
8							
10						SM	SILTY SAND; moderate yellowish brown (10YR 5/4); 80% very fine to fine sand; 20% silt, nonplastic; loose; saturated
12							
14							
16							
18							
20						SP-SM	POORLY GRADED SAND WITH SILT; 10-15% silt, silt decreasing; trace medium to coarse grained sand; saturated
22							Becomes soupy at 22 feet.
24							

Continued Next Page

Drilling Log

Monitoring Well **MW4-2-5**

Project *Alameda Pt CTO 133* Owner *US Navy*

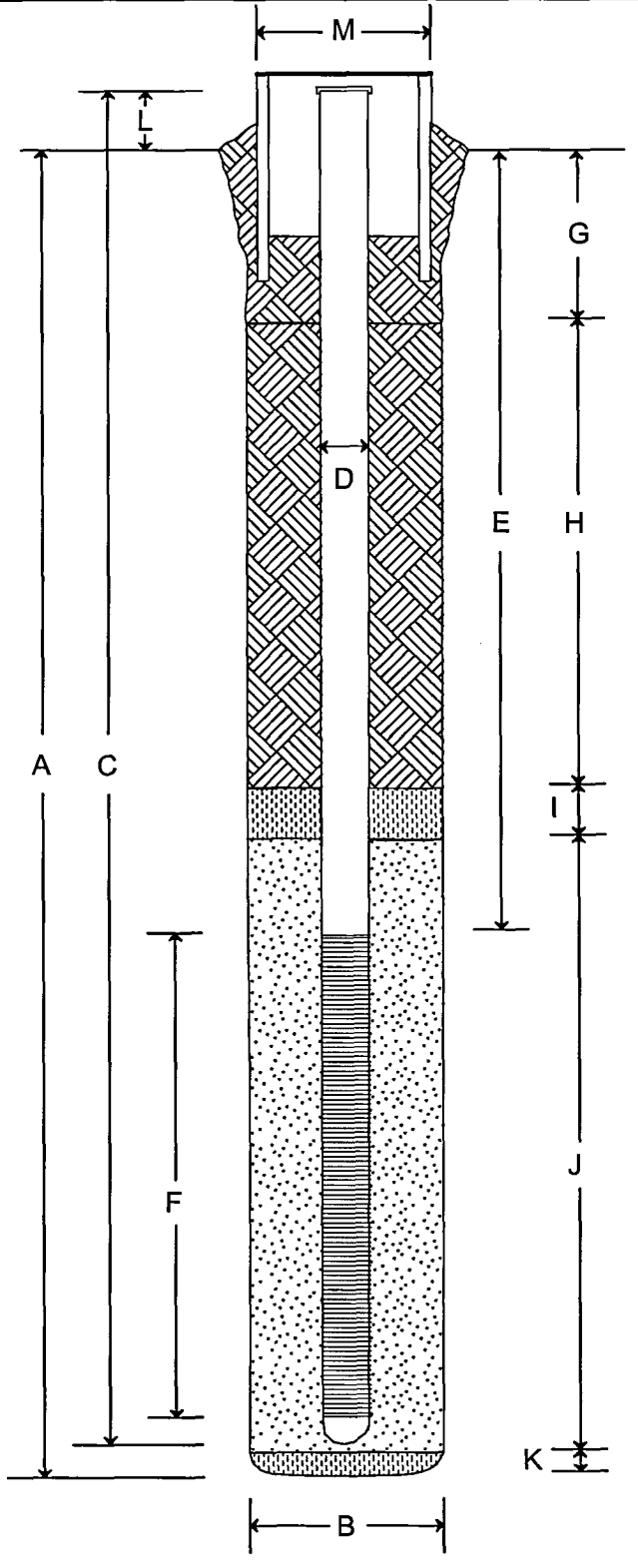
Location *Alameda, CA* Proj. No. *108816*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery / Blow Count Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
26						*Continued* POORLY GRADED SAND WITH SILT; 10% silt, trace medium to coarse grained sand; saturated, soupy
28						
30					SP-SM	
32						
34						SILTY SAND; olive brown (2.5Y 4/3); 25-35% silt; fine grained with trace medium sand; saturated
36					SM	
38						
40						TD=39 ft
42						Note: Above 30 feet, soil descriptions were generated from soil grab sample specimens collected from the veins of hollow stem auger flytes. As a result, the depths of all descriptions and soil horizon boundaries are approximate.
44						
46						
48						
50						
52						
54						
56						
58						

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0452

BORING/WELL NO.: MW4-2-5
TOP OF CASING ELEV.: n/a (MSL)
GROUND SURFACE ELEV.: 12.85 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth: 39 ft.
B. Boring Diameter: 8 in.
Drilling Method: Hollow Stem Auger

WELL CONSTRUCTION

C. Casing Length: 38.5 ft.
Material: Sch 5, Type 304, Stainless Steel
D. Casing Diameter: 2 in.
E. Depth to Top of Screen: 32 ft.
F. Screen Length: 5 ft.
Slotted Interval from: 32 to 37 ft.
Slot Type: continuous wrap SS
Slot Size: 0.020 in.
G. Surface Seal: -- ft.
Seal Material: n/a
H. Annular Seal: 29 ft.
Seal Material: Baselite I-II-V cement
I. Transition Sand: 1 ft.
Transition Material: RMC Pacific #60 sand
J. Filter Pack: 9 ft.
Material: RMC Pacific-Lapis Lustre # 2/16 sand
K. Backfill: -- ft.
Material: n/a
L. Top of Casing Height: 1.5 ft.
M. Protective Cover Diameter: 4 in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-6**

Project *Alameda Pt CTO 133* Owner *US Navy*

Location *Alameda, CA* Proj. No. *108816*

Surface Elev. (msl) *16.47 ft.* Total Hole Depth *20.5 ft.* North *470388* East *1481834*

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter *8 in.*

Screen: Dia *2 in.* Length *5 ft.* Type/Size *Sch 40 PVC/0.020 in.*

Casing: Dia *2 in.* Length *15 ft.* Type *Sch 5, Type 304, Stainless Steel*

Fill Material *See Comments* Rig/Core *Geoprobe 7730DT*

Drill Co. *WDC Exploration & Wells* Method *Hollow Stem Auger*

Driller *J. Zimmer/J. Trujillo* Log By *Joe Strack* Date *7/8/06* Permit # *W2006-0453*

Checked By *Eugene Mullenmeister, PG* C57 License No. *283326*

COMMENTS

Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

Surface elevation value reflects surveyed raised floor.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
							Depths are below ground level.
0							Initial hole cleared for utilities to five feet with air-knife and backfilled with air-knifed cuttings. Cuttings above 5 feet not described.
2							
4							
6							SILTY SAND; moderate yellowish brown (10YR 5/4); 60% very fine grained sand; 40% silt, nonplastic; loose; noncohesive; saturated
8							
10						SM	
12							
14							

Continued Next Page

Drilling Log

Monitoring Well **MW4-2-6**

Project *Alameda Pt CTO 133* Owner *US Navy*

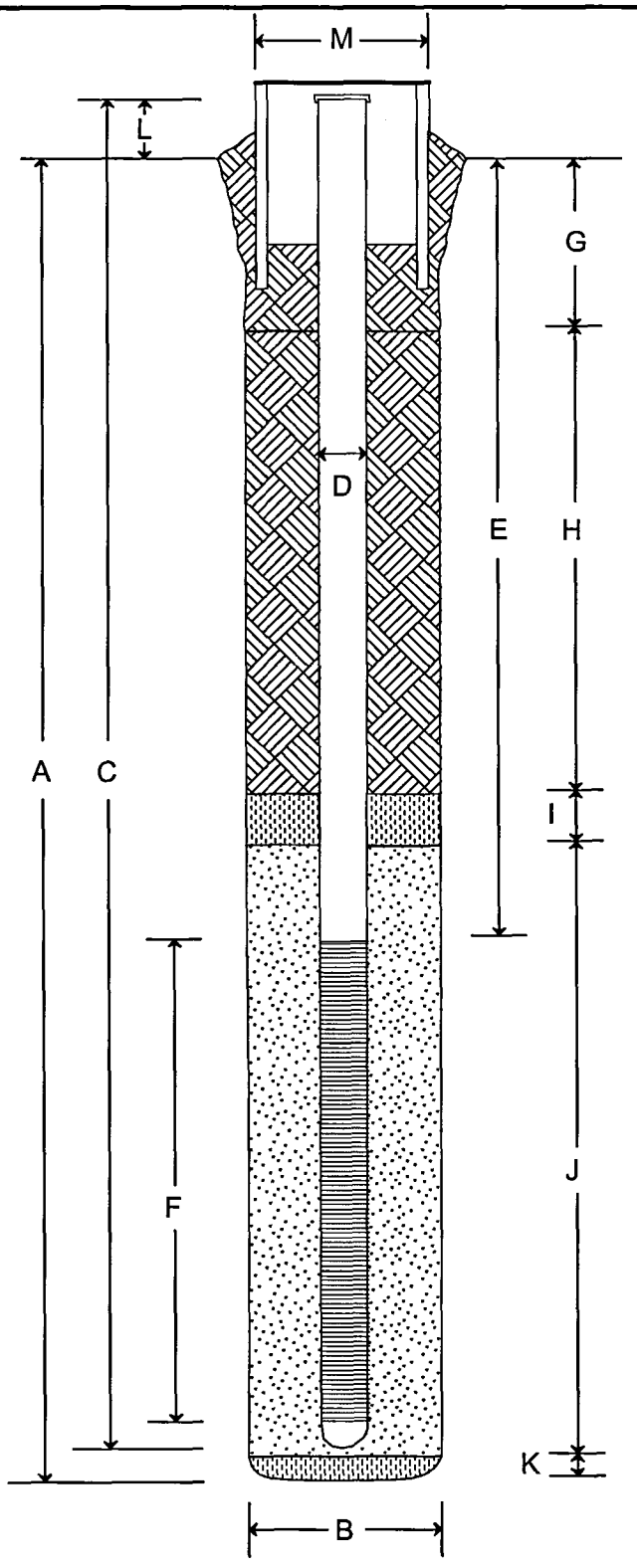
Location *Alameda, CA* Proj. No. *108816*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery / Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
16						*Continued* SILTY SAND; moderate yellowish brown (10YR 5/4); 60% very fine grained sand; 40% silt, nonplastic; loose; noncohesive; saturated
18					SM	
20						
22						TD=20.5 ft
24						Note: Soil descriptions were generated from soil grab sample specimens collected from the veins of hollow stem auger flytes. As a result, the depths of all descriptions and soil horizon boundaries are approximate.
26						
28						
30						
32						
34						

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0453

BORING/WELL NO.: MW4-2-6
TOP OF CASING ELEV.: n/a (MSL)
CEMENT FLOOR ELEV.: 16.47 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth: 20.5 ft.
B. Boring Diameter: 8 in.
Drilling Method: Hollow Stem Auger

WELL CONSTRUCTION

C. Casing Length (BGL): 20 ft.
Material: Sch 5, Type 304, Stainless Steel
D. Casing Diameter: 2 in.
E. Depth to Top of Screen: 15 ft.
F. Screen Length: 5 ft.
Slotted Interval from: 15 to 20 ft.
Slot Type: continuous wrap SS
Slot Size: 0.020 in.
G. Surface Seal: -- ft.
Seal Material: n/a
H. Annular Seal: 12 ft.
Seal Material: Baselite I-II-V cement
I. Transition Sand: 1 ft.
Transition Material: RMC Pacific #60 sand
J. Filter Pack: 7 ft.
Material: RMC Pacific-Lapis Lustre # 2/16 sand
K. Backfill: -- ft.
Material: n/a
L. Top of Casing Height: n/a ft.
M. Protective Cover Diameter: 4 in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-7**

Project *Alameda Pt CTO 133* Owner *US Navy*

Location *Alameda, CA* Proj. No. *108816*

Surface Elev. (msl) *16.48 ft.* Total Hole Depth *31.5 ft.* North *470397* East *1481837*

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter *8 in.*

Screen: Dia *2 in.* Length *5 ft.* Type/Size *Sch 40 PVC/0.020 in.*

Casing: Dia *2 in.* Length *26.2 ft.* Type *Sch 5, Type 304, Stainless Steel*

Fill Material *See Comments* Rig/Core *Limited Access CME-75*

Drill Co. *WDC Exploration & Wells* Method *Hollow Stem Auger*

Driller *J. Zimmer/J. Trujillo* Log By *Garrick Anderson, CPG* Date *7/9/06* Permit # *W2006-0454*

Checked By *Eugene Mullenmeister, PG* C57 License No. *283326*

COMMENTS

Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

Surface elevation value reflects surveyed raised floor.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
							Depths are below ground level.
0							Initial 16-inch diameter hole cleared for utilities to five feet with air-knife and backfilled with air-knifed cuttings. Cuttings above 15 feet not described due to no sample returns to surface.
16						SM	SILTY SAND; light olive brown (2.5Y 5/4); 80% sand; 20% silt; loose; fine grained; wet
18							POORLY GRADED SAND WITH SILT; 10-15% silt; wet
20						SP-SM	Silt decreases to 10% at 21 feet.
24						SP	POORLY GRADED SAND; trace silt; wet

Continued Next Page

Drilling Log

Monitoring Well **MW4-2-7**

Project *Alameda Pt CTO 133* Owner *US Navy*

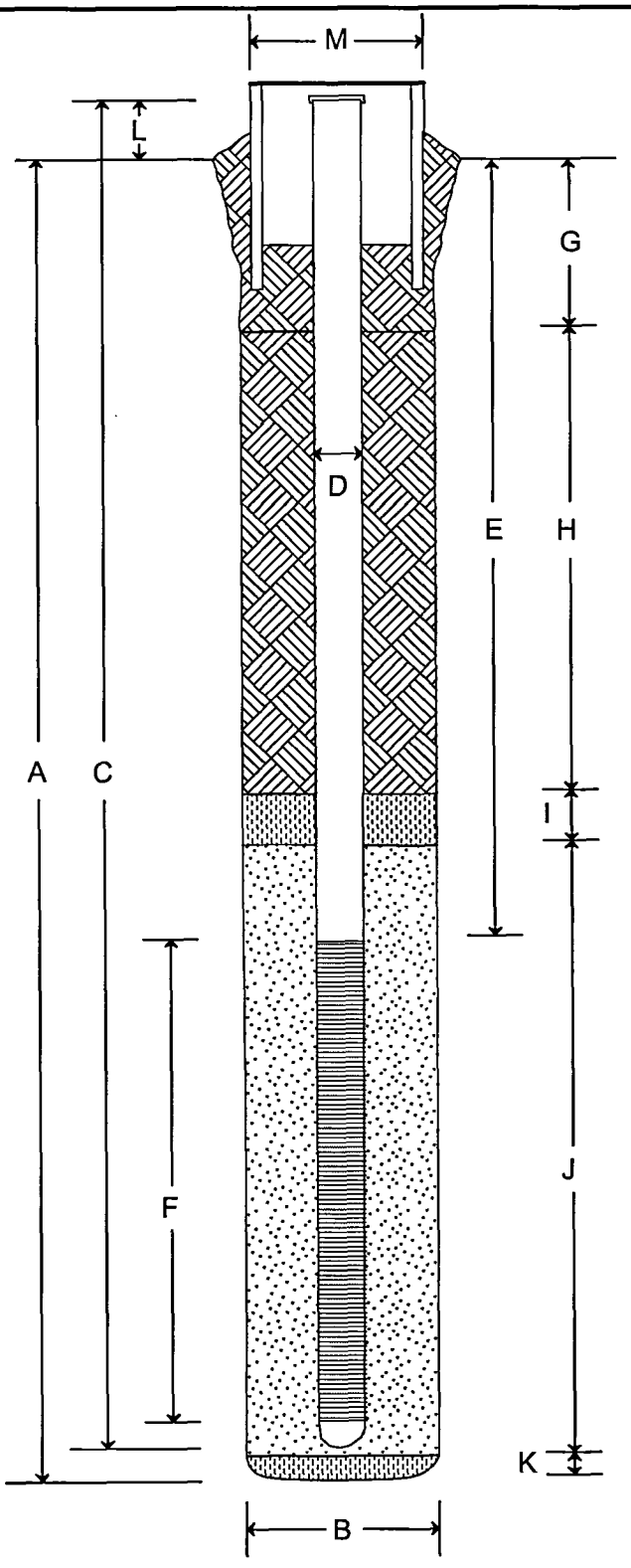
Location *Alameda, CA* Proj. No. *108816*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
							Continued
26						SP	POORLY GRADED SAND; trace silt; wet
28						SP-SM	POORLY GRADED SAND WITH SILT; light olive brown (2.5Y 5/4); 10% silt; fine grained; loose; wet
30						SM	SILTY SAND; light olive brown (2.5Y 5/4); 65-80% sand; 20-35% silt; loose; fine grained; wet
32							TD=31.5 ft
34							
36							
38							
40							
42							
44							
46							
48							
50							
52							
54							
56							
58							

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0454

BORING/WELL NO.: MW4-2-7
TOP OF CASING ELEV.: n/a (MSL)
CEMENT FLOOR ELEV.: 16.48 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth: 31.5 ft.
B. Boring Diameter: 8 in.
Drilling Method: Hollow Stem Auger

WELL CONSTRUCTION

C. Casing Length (BGL): 31.2 ft.
Material: Sch 5, Type 304, Stainless Steel
D. Casing Diameter: 2 in.
E. Depth to Top of Screen: 26.2 ft.
F. Screen Length: 5 ft.
Slotted Interval from: 26.2 to 31.2 ft.
Slot Type: continuous wrap SS
Slot Size: 0.020 in.
G. Surface Seal: -- ft.
Seal Material: n/a
H. Annular Seal: 22.8 ft.
Seal Material: Baselite I-II-V cement
I. Transition Sand: 1.2 ft.
Transition Material: RMC Pacific #60 sand
J. Filter Pack: 7.5 ft.
Material: RMC Pacific-Lapis Lustre # 2/16 sand
K. Backfill: -- ft.
Material: n/a
L. Top of Casing Height: n/a ft.
M. Protective Cover Diameter: 4 in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-8**

Project *Alameda Pt CTO 133* Owner *US Navy*

Location *Alameda, CA* Proj. No. *108816*

Surface Elev. (msl) *16.48 ft.* Total Hole Depth *40.0 ft.* North *470399* East *1481831*

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter *8 in.*

Screen: Dia *2 in.* Length *5 ft.* Type/Size *Sch 40 PVC/0.020 in.*

Casing: Dia *2 in.* Length *35 ft.* Type *Sch 5, Type 304, Stainless Steel*

Fill Material *See Comments* Rig/Core *Geoprobe 7730DT*

Drill Co. *WDC Exploration & Wells* Method *Hollow Stem Auger*

Driller *J. Zimmer/J. Trujillo* Log By *Eugene Mullenmeister* Date *6/12/06* Permit # *W2006-0455*

Checked By *Eugene Mullenmeister, PG* C57 License No. *283326*

COMMENTS

Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

Surface elevation value reflects surveyed raised floor.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
							Depths are below ground level.
0							Initial hole cleared for utilities to five feet with air-knife and backfilled with air-knifed cuttings. Cuttings above 5 feet not described.
6						SM	SILTY SAND; olive brown (2.5Y 4/4); 80% fine to medium grained sand; 20% silt; trace clay; wet
14						SM	Becomes light olive brown (2.5Y 5/4) at ~15 feet.
20						SP-SM	POORLY GRADED SAND WITH SILT; light olive brown (2.5Y 5/6); 90% fine to medium grained sand; 10% silt; wet

Continued Next Page

Drilling Log

Monitoring Well **MW4-2-8**

Project *Alameda Pt CTO 133* Owner *US Navy*

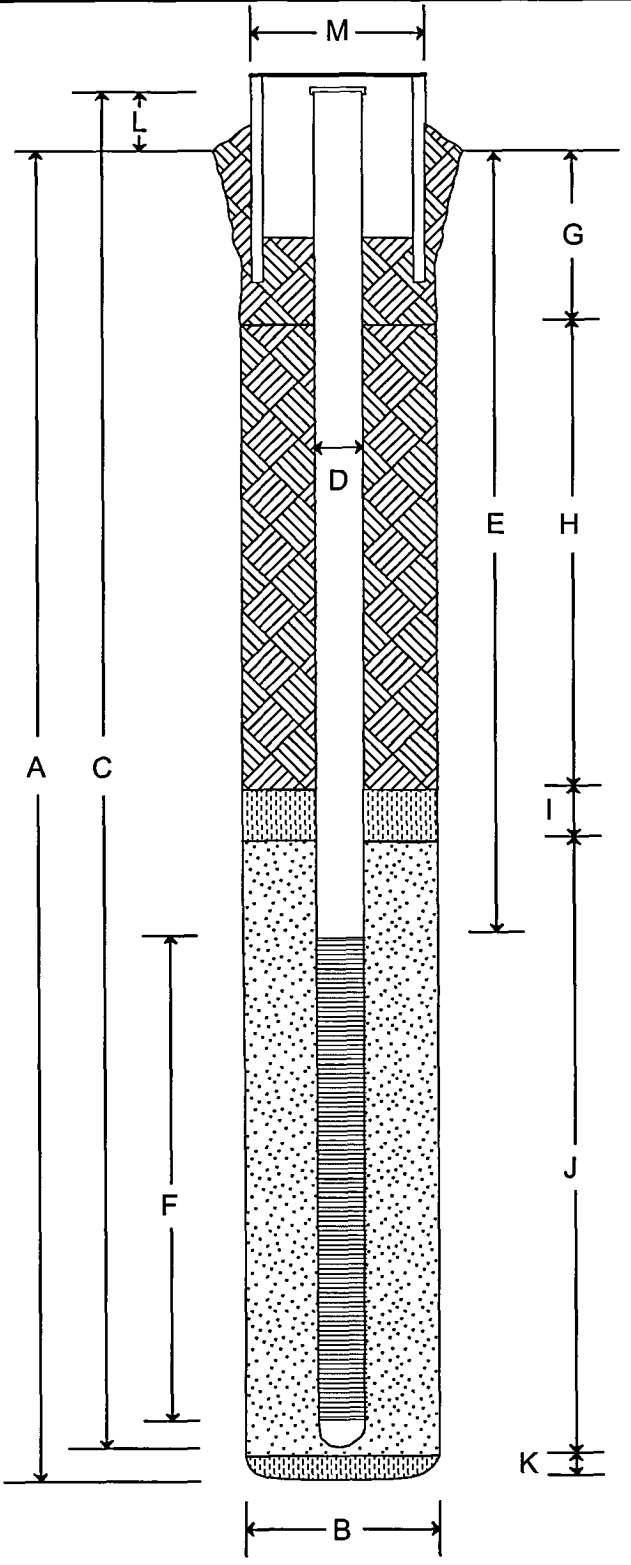
Location *Alameda, CA* Proj. No. *108816*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
26							*Continued* POORLY GRADED SAND WITH SILT; light olive brown (2.5Y 5/6); 90% fine to medium grained sand; 10% silt; wet
28							
30							
32						SP-SM	
34							
36							
38						SM	SILTY SAND; light olive brown (2.5Y 5/6); 65% fine to medium grained sand; 25% silt; 5% clay; wet
40							TD=40 ft
42							Note: Soil descriptions were generated from soil grab sample specimens collected from the veins of hollow stem auger flytes. As a result, the depths of all descriptions and soil horizon boundaries are approximate.
44							
46							
48							
50							
52							
54							
56							
58							

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0455

BORING/WELL NO.: MW4-2-8
TOP OF CASING ELEV.: n/a (MSL)
CEMENT FLOOR ELEV.: 16.48 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth: 40 ft.
B. Boring Diameter: 8 in.
Drilling Method: Hollow Stem Auger

WELL CONSTRUCTION

C. Casing Length (BGL): 40 ft.
Material: Sch 5, Type 304, Stainless Steel
D. Casing Diameter: 2 in.
E. Depth to Top of Screen: 35 ft.
F. Screen Length: 5 ft.
Slotted Interval from: 35 to 40 ft.
Slot Type: continuous wrap SS
Slot Size: 0.020 in.
G. Surface Seal: -- ft.
Seal Material: n/a
H. Annular Seal: 31.5 ft.
Seal Material: Baselite I-II-V cement
I. Transition Sand: 1.5 ft.
Transition Material: RMC Pacific #60 sand
J. Filter Pack: 7 ft.
Material: RMC Pacific-Lapis Lustre # 2/16 sand
K. Backfill: -- ft.
Material: n/a
L. Top of Casing Height: n/a ft.
M. Protective Cover Diameter: 4 in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-9**

Project *Alameda Pt CTO 133* Owner *US Navy*

Location *Alameda, CA* Proj. No. *108816*

Surface Elev. (msl) *16.46 ft.* Total Hole Depth *18.3 ft.* North *470419* East *1481875*

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter *8 in.*

Screen: Dia *2 in.* Length *5 ft.* Type/Size *Sch 40 PVC/0.020 in.*

Casing: Dia *2 in.* Length *13.3 ft.* Type *Sch 5, Type 304, Stainless Steel*

Fill Material *See Comments* Rig/Core *Geoprobe 7730DT*

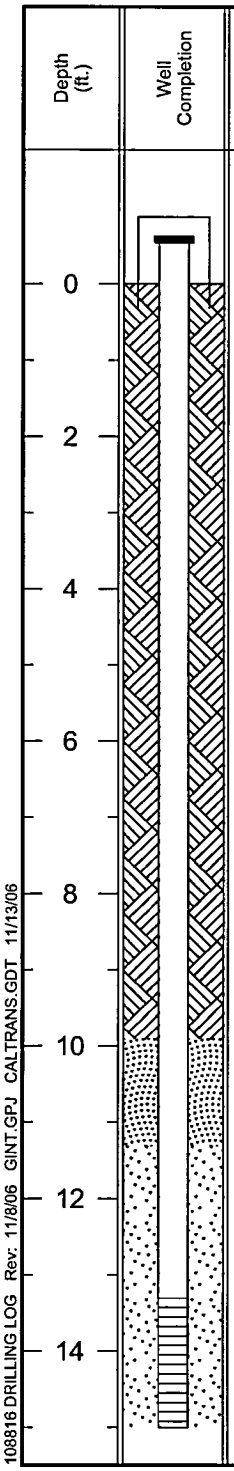
Drill Co. *WDC Exploration & Wells* Method *Hollow Stem Auger*

Driller *J. Zimmer/J. Trujillo* Log By *Eugene Mullenmeister* Date *6/12/06* Permit # *W2006-0456*

Checked By *Eugene Mullenmeister, PG* C57 License No. *283326*

COMMENTS
Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

Surface elevation value reflects surveyed raised floor.



Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
							Depths are below ground level.
0							Initial hole cleared for utilities to five feet with air-knife and backfilled with air-knifed cuttings. Cuttings above 5 feet not described.
4							SILTY SAND; olive brown (2.5Y 4/4); 80% fine to medium grained sand; 20% silt; trace clay; wet
10		0.0				SM	
14							Color change to light olive brown (2.5Y 5/6).

Continued Next Page

Drilling Log

Monitoring Well **MW4-2-9**

Project *Alameda Pt CTO 133* Owner *US Navy*

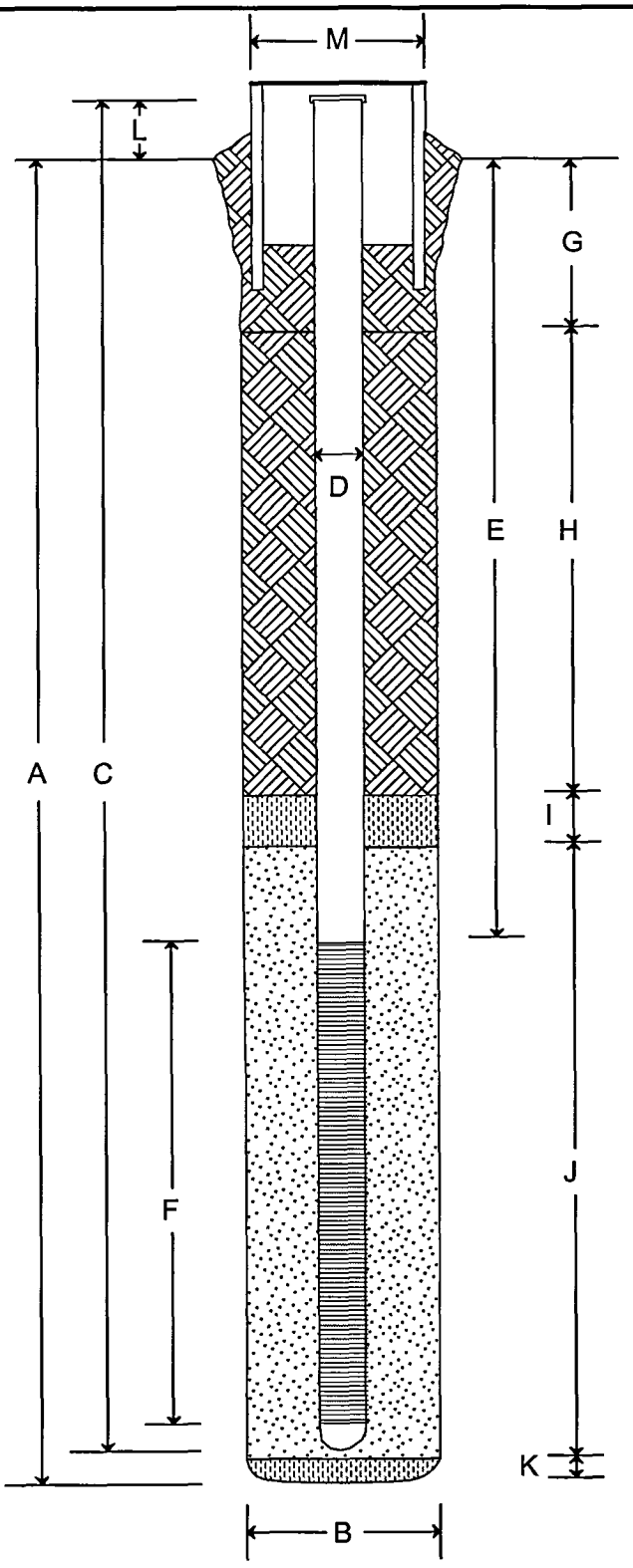
Location *Alameda, CA* Proj. No. *108816*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery / Blow Count Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
16						*Continued* SILTY SAND; light olive brown (2.5Y 5/6); 80% fine to medium grained sand; 20% silt; wet
18					SM	
20						TD=18.3 ft
22						Note: Soil descriptions were generated from soil grab sample specimens collected from the veins of hollow stem auger flytes. As a result, the depths of all descriptions and soil horizon boundaries are approximate.
24						
26						
28						
30						
32						
34						

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0456

BORING/WELL NO.: MW4-2-9
TOP OF CASING ELEV.: n/a (MSL)
CEMENT FLOOR ELEV.: 16.46 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth: 18.3 ft.
B. Boring Diameter: 8 in.
Drilling Method: Hollow Stem Auger

WELL CONSTRUCTION

C. Casing Length (BGL): 18.3 ft.
Material: Sch 5, Type 304, Stainless Steel
D. Casing Diameter: 2 in.
E. Depth to Top of Screen: 13.3 ft.
F. Screen Length: 5 ft.
Slotted Interval from: 13.3 to 18.3 ft.
Slot Type: continuous wrap SS
Slot Size: 0.020 in.
G. Surface Seal: -- ft.
Seal Material: n/a
H. Annular Seal: 9.9 ft.
Seal Material: Baselite I-II-V cement
I. Transition Sand: 1.4 ft.
Transition Material: RMC Pacific #60 sand
J. Filter Pack: 7 ft.
Material: RMC Pacific-Lapis Lustre # 2/16 sand
K. Backfill: -- ft.
Material: n/a
L. Top of Casing Height: n/a ft.
M. Protective Cover Diameter: 4 in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-10**

Project *Alameda Pt CTO 133* Owner *US Navy*

Location *Alameda, CA* Proj. No. *108816*

Surface Elev. (msl) *12.57 ft.* Total Hole Depth *30.0 ft.* North *470333* East *1481820*

Top of Casing *NA* Water Level Initial ▽ *3.0 ft.* Static *NA* Diameter *8 in.*

Screen: Dia *2 in.* Length *5 ft.* Type/Size *Sch 40 PVC/0.020 in.*

Casing: Dia *2 in.* Length *24.5 ft.* Type *Sch 5, Type 304, Stainless Steel*

Fill Material *See Comments* Rig/Core

Drill Co. *WDC Exploration & Wells* Method *Hollow Stem Auger*

Driller *J. Zimmer/J. Trujillo* Log By *Garrick Anderson, CPG* Date *7/7/06* Permit # *W2006-0442*

Checked By *Eugene Mullenmeister, PG* C57 License No. *283326*

COMMENTS
Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

PID from "headspace."

Surface elevation reflects surveyed ground level.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery / Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
						Depths are below ground level.
0						Initial hole cleared for utilities to five feet with air-knife and backfilled with air-knifed cuttings. Cuttings above 2 feet not described.
2						POORLY GRADED SAND; dark grayish brown (2.5Y 4/2); loose; fine grained sand, rare medium grained sand; trace silt; wet
4		0.2				
6					SP	
8						
10						POORLY GRADED SAND WITH SILT; olive brown (2.5Y 4/3) fine grained; loose; wet
12		0.0			SP-SM	
		0.0				Contains 10-15% silt at 13 feet.
14		0.3				
		0.4				SILTY SAND; light olive brown (2.5Y 5/3); fine grained; ~20% silt; loose; wet
16						
18					SM	
		0.1				Silt decreases to 15% at 19 feet.
20						Saturated at 20 feet. No cuttings returns to surface from 20-27 feet.
22						
24						

Continued Next Page

Drilling Log

Monitoring Well **MW4-2-10**

Project *Alameda Pt CTO 133* Owner *US Navy*

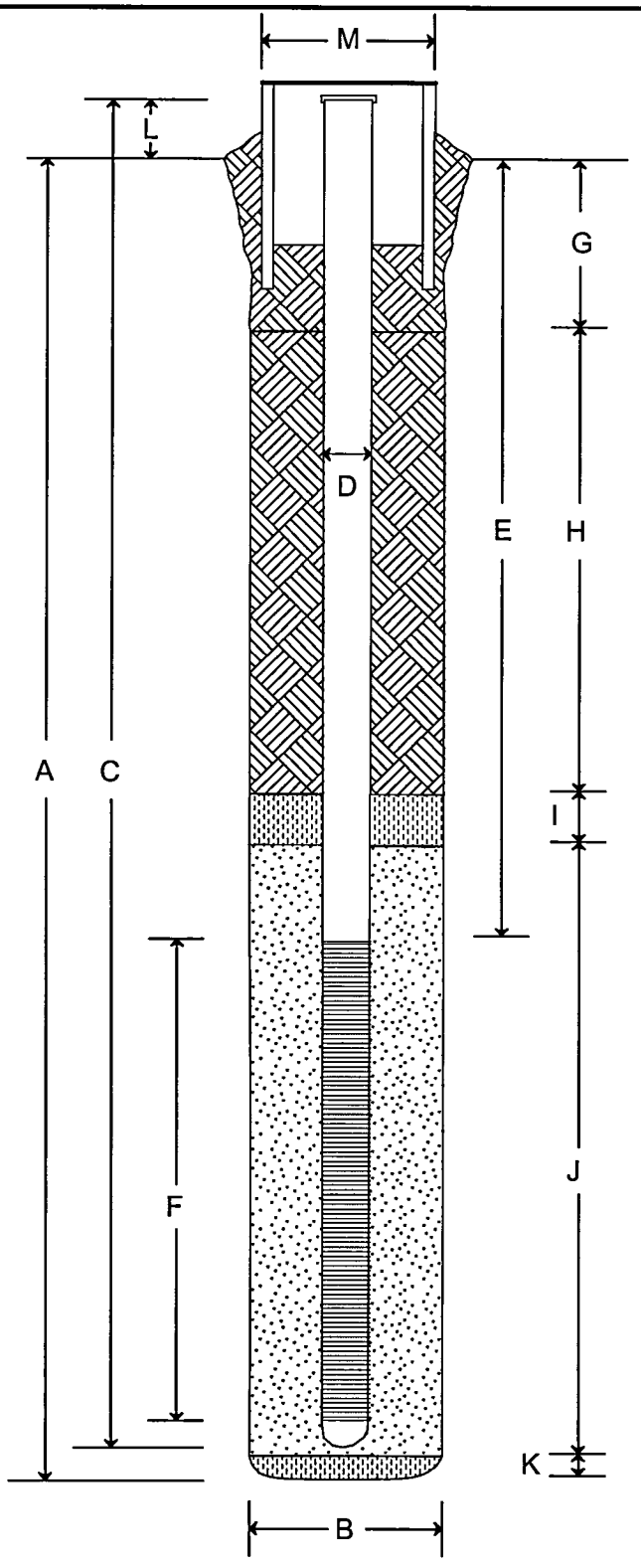
Location *Alameda, CA* Proj. No. *108816*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID % Recovery	Blow Count Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
26							*Continued* Saturated at 20 feet. No cuttings returns to surface from 20-27 feet.
28		0.0				SM	SILTY SAND; light olive brown (2.5Y 5/4); fine grained sand; 25-45% silt; very loose; saturated/fluid
30							TD=30 ft
32							
34							
36							
38							
40							
42							
44							
46							
48							
50							
52							
54							
56							
58							

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0442

BORING/WELL NO.: MW4-2-10
TOP OF CASING ELEV.: n/a (MSL)
GROUND SURFACE ELEV.: 12.57 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth	30	ft.
B. Boring Diameter	8	in.
Drilling Method	Hollow Stem Auger	

WELL CONSTRUCTION

C. Casing Length	31.83	ft.
Material	Sch 5, Type 304, Stainless Steel	
D. Casing Diameter	2	in.
E. Depth to Top of Screen	24.5	ft.
F. Screen Length	5	ft.
Slotted Interval from	24.5 to 29.5	ft.
Slot Type	continuous wrap SS	
Slot Size	0.020	in.
G. Surface Seal	--	ft.
Seal Material	n/a	
H. Annular Seal	22	ft.
Seal Material	Baselite I-II-V cement	
I. Transition Sand	1	ft.
Transition Material	RMC Pacific #60 sand	
J. Filter Pack	7	ft.
Material	RMC Pacific-Lapis Lustre # 2/16 sand	
K. Backfill	--	ft.
Material	n/a	
L. Top of Casing Height	2.33	ft.
M. Protective Cover Diameter	4	in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-11**

Project *Alameda Pt CTO 133* Owner *US Navy*

Location *Alameda, CA* Proj. No. *108816*

Surface Elev. (msl) *16.47 ft.* Total Hole Depth *10.0 ft.* North *470386* East *1481935*

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter *8 in.*

Screen: Dia *2 in.* Length *5 ft.* Type/Size *Sch 40 PVC/0.020 in.*

Casing: Dia *2 in.* Length *5 ft.* Type *Sch 5, Type 304, Stainless Steel*

Fill Material *See Comments* Rig/Core *Geoprobe 7730DT*

Drill Co. *WDC Exploration & Wells* Method *Hollow Stem Auger*

Driller *J. Zimmer/J. Trujillo* Log By *Eugene Mullenmeister* Date *6/27/06* Permit # *W2006-0443*

Checked By *Eugene Mullenmeister, PG* C57 License No. *283326*

COMMENTS

Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

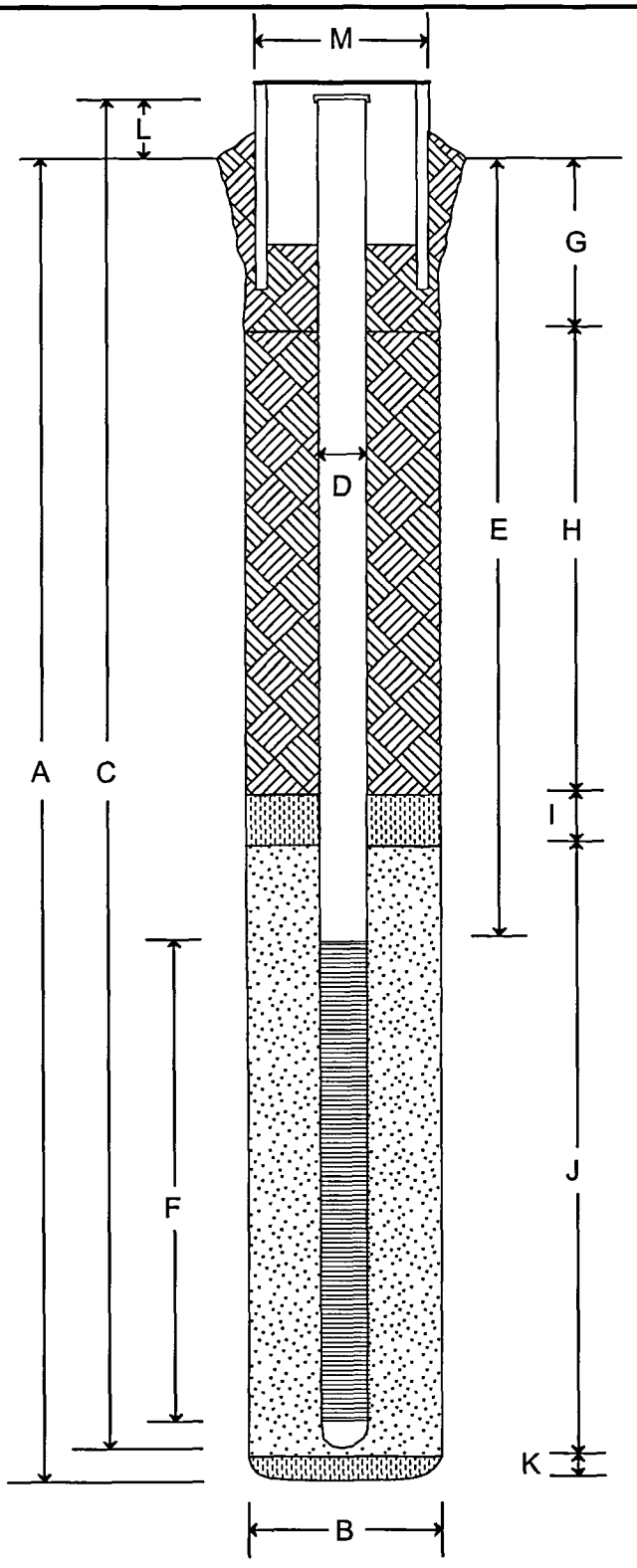
Surface elevation value reflects surveyed raised floor.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
							Depths are below ground level.
0							Initial hole cleared for utilities to five feet with air-knife and backfilled with air-knifed cuttings. Cuttings above 5 feet not described.
2							
4							
6							SANDY SILT; mottled yellowish brown (10YR 5/4) and yellowish red (5YR 4/6); 25% clay; 35% silt; 40% very fine sand; moist
8						ML	
10							TD=10 ft
12							Note: Soil descriptions were generated from soil grab sample specimens collected from the veins of hollow stem auger flytes. As a result, the depths of all descriptions and soil horizon boundaries are approximate.
14							

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0443

BORING/WELL NO.: MW4-2-11
TOP OF CASING ELEV.: n/a (MSL)
CEMENT FLOOR ELEV.: 16.47 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth	10	ft.
B. Boring Diameter	8	in.
Drilling Method	Hollow Stem Auger	

WELL CONSTRUCTION

C. Casing Length (BGL)	10	ft.
Material	Sch 5, Type 304, Stainless Steel	
D. Casing Diameter	2	in.
E. Depth to Top of Screen	5	ft.
F. Screen Length	5	ft.
Slotted Interval from	5 to 10	ft.
Slot Type	continuous wrap SS	
Slot Size	0.020	in.
G. Surface Seal	--	ft.
Seal Material	n/a	
H. Annular Seal	2	ft.
Seal Material	Baselite I-II-V cement	
I. Transition Sand	0.75	ft.
Transition Material	RMC Pacific #60 sand	
J. Filter Pack	7.25	ft.
Material	RMC Pacific-Lapis Lustre # 2/16 sand	
K. Backfill	--	ft.
Material	n/a	
L. Top of Casing Height	n/a	ft.
M. Protective Cover Diameter	4	in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-12**

Project *Alameda Pt CTO 133* Owner *US Navy*

Location *Alameda, CA* Proj. No. *108816*

Surface Elev. (msl) *16.45 ft.* Total Hole Depth *31.2 ft.* North *470384* East *1481930*

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter *8 in.*

Screen: Dia *2 in.* Length *5 ft.* Type/Size *Sch 40 PVC/0.020 in.*

Casing: Dia *2 in.* Length *26 ft.* Type *Sch 5, Type 304, Stainless Steel*

Fill Material *See Comments* Rig/Core *Limited Access CME-25*

Drill Co. *WDC Exploration & Wells* Method *Hollow Stem Auger*

Driller *R. McGahey/A. Vasquez* Log By *Garrick Anderson, CPG* Date *7/12/06* Permit # *W2006-0444*

Checked By *Eugene Mullenmeister, PG* C57 License No. *283326*

COMMENTS

Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

Surface elevation value reflects surveyed raised floor.

PID by "headspace"

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
							Depths are below ground level.
0							Initial hole cleared for utilities to five feet with air-knife and backfilled with air-knifed cuttings. Cuttings above 15 feet not described.
2							
4							
6							
8							
10							
12							
14							
16		10.6					SILTY SAND; olive brown (2.5Y 4/3); very fine grained sand; 15-20% silt; loose; very wet
18		15.7					Becomes olive brown (2.5Y 4/4) at 18 feet.
20		8.9				SM	Becomes olive brown (2.5Y 4/3) at 20 feet. Trace medium sand.
22							SILTY SAND; loose fine-grained sand; 20-25% silt; very wet; poor cuttings returns
24		8.6					

Continued Next Page

Drilling Log

Monitoring Well **MW4-2-12**

Project *Alameda Pt CTO 133* Owner *US Navy*

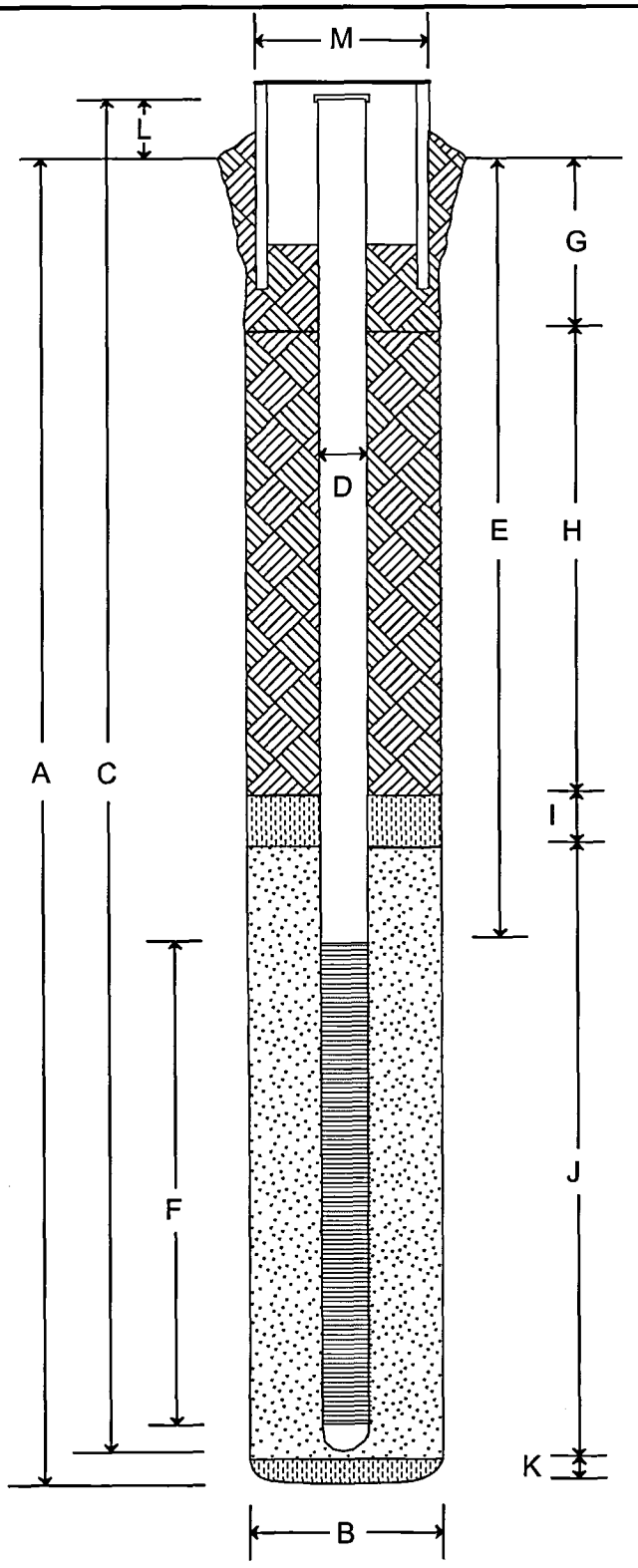
Location *Alameda, CA* Proj. No. *108816*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery / Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
26						*Continued*
28		27			SM	SILTY SAND; loose fine-grained sand; 20-25% silt; very wet; poor cuttings returns
30						Turns soupy at 30 feet.
32						TD=31.2 ft
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						
58						

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0444

BORING/WELL NO.: MW4-2-12
TOP OF CASING ELEV.: n/a (MSL)
CEMENT FLOOR ELEV.: 16.45 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth: 31.2 ft.
B. Boring Diameter: 8 in.
Drilling Method: Hollow Stem Auger

WELL CONSTRUCTION

C. Casing Length (BGL): 31 ft.
Material: Sch 5, Type 304, Stainless Steel
D. Casing Diameter: 2 in.
E. Depth to Top of Screen: 26 ft.
F. Screen Length: 5 ft.
Slotted Interval from: 26 to 31 ft.
Slot Type: continuous wrap SS
Slot Size: 0.020 in.
G. Surface Seal: -- ft.
Seal Material: n/a
H. Annular Seal: 23 ft.
Seal Material: Baselite I-II-V cement
I. Transition Sand: 1 ft.
Transition Material: RMC Pacific #60 sand
J. Filter Pack: 7 ft.
Material: RMC Pacific-Lapis Lustre # 2/16 sand
K. Backfill: -- ft.
Material: n/a
L. Top of Casing Height: n/a ft.
M. Protective Cover Diameter: 4 in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-13**

Project *Alameda Pt CTO 133* Owner *US Navy*

Location *Alameda, CA* Proj. No. *108816*

Surface Elev. (msl) *16.48 ft.* Total Hole Depth *40.0 ft.* North *470378* East *1481934*

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter *8 in.*

Screen: Dia *2 in.* Length *5 ft.* Type/Size *Sch 40 PVC/0.020 in.*

Casing: Dia *2 in.* Length *35 ft.* Type *Sch 5, Type 304, Stainless Steel*

Fill Material *See Comments* Rig/Core *Geoprobe 7730DT*

Drill Co. *WDC Exploration & Wells* Method *Hollow Stem Auger*

Driller *J. Zimmer/J. Trujillo* Log By *Jim Teo* Date *6/26/06* Permit # *W2006-0445*

Checked By *Eugene Mullenmeister, PG* C57 License No. *283326*

COMMENTS
Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

Surface elevation value reflects surveyed raised floor.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
							Depths are below ground level.
0							Initial hole cleared for utilities to five feet with air-knife and backfilled with air-knifed cuttings. Cuttings above 4 feet not described.
4							SILTY SAND; dark gray (7.5YR 4/2); loose/no cohesion; wet
6							Becomes dark reddish gray (5YR 4/2). Moist to wet.
8							Dark gray (7.5YR 4/2). Loose/no cohesion and wet.
10						SM	
14							SILTY SAND (60%); (10YR 4/2); loose, non-cohesive; mixed with SANDY SILT WITH CLAY (40%); 10YR 4/4); slightly stiff; wet
16						SM/ML	
20							SILTY SAND; (10YR 4/2); loose; fine-grained sand; non-choesive; wet
22						SM	
24							

Continued Next Page

Drilling Log

Monitoring Well **MW4-2-13**

Project *Alameda Pt CTO 133* Owner *US Navy*

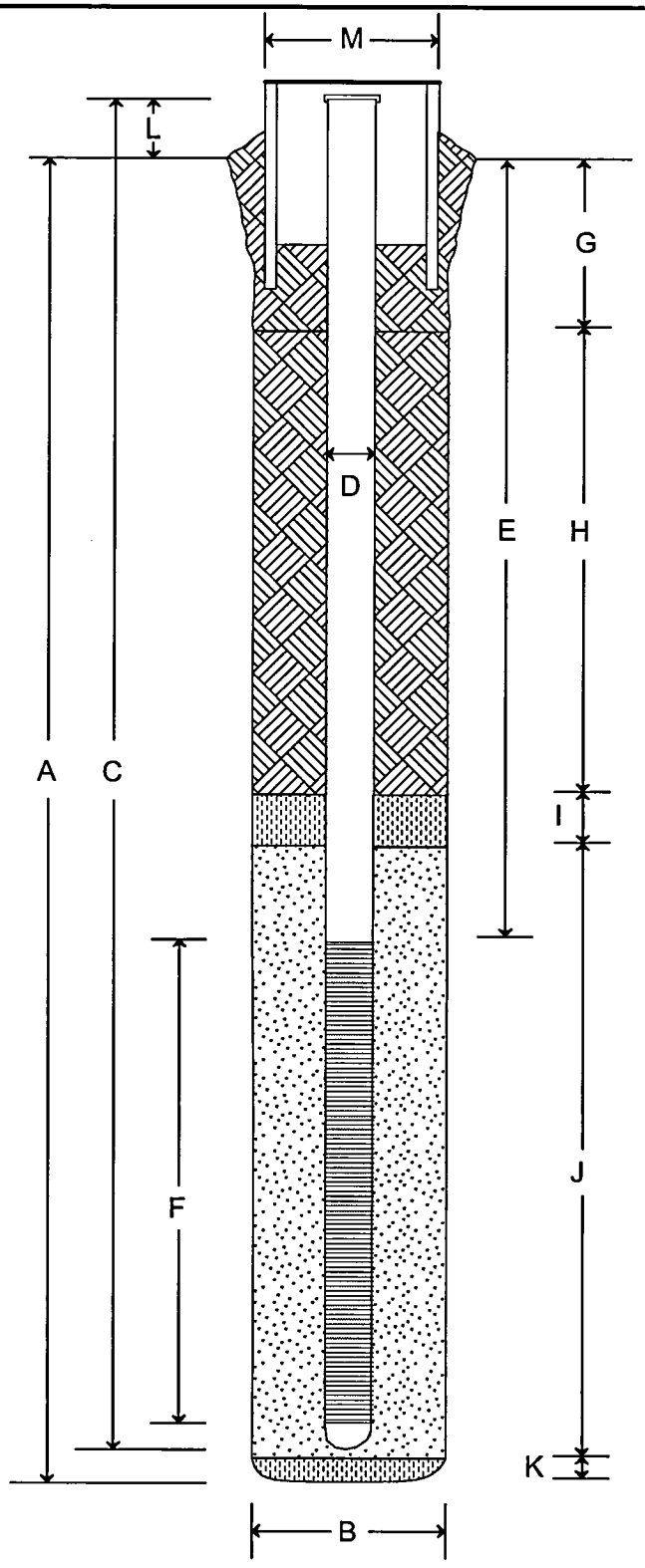
Location *Alameda, CA* Proj. No. *108816*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
26							*Continued* SILTY SAND; (10YR 4/2); loose; fine-grained sand; non-choesive; wet
28							
30							
32						SM	
34							
36							Becomes slightly cohesive at 35 feet.
38							
40							Becomes (10YR 4/4) Sandy Silt at 40 feet. Some clay, cohesive, and wet. TD=40 ft
42							Note: Soil descriptions were generated from soil grab sample specimens collected from the veins of hollow stem auger flytes. As a result, the depths of all descriptions and soil horizon boundaries are approximate.
44							
46							
48							
50							
52							
54							
56							
58							

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0445

BORING/WELL NO.: MW4-2-13
TOP OF CASING ELEV.: n/a (MSL)
CEMENT FLOOR ELEV.: 16.48 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth: 40 ft.
B. Boring Diameter: 8 in.
Drilling Method: Hollow Stem Auger

WELL CONSTRUCTION

C. Casing Length (BGL): 40 ft.
Material: Sch 5, Type 304, Stainless Steel
D. Casing Diameter: 2 in.
E. Depth to Top of Screen: 34.75 ft.
F. Screen Length: 5 ft.
Slotted Interval from: 34.75 to 39.75 ft.
Slot Type: continuous wrap SS
Slot Size: 0.020 in.
G. Surface Seal: -- ft.
Seal Material: n/a
H. Annular Seal: 33.5 ft.
Seal Material: Baselite I-II-V cement
I. Transition Sand: 1 ft.
Transition Material: RMC Pacific #60 sand
J. Filter Pack: 5.5 ft.
Material: RMC Pacific-Lapis Lustre # 2/16 sand
K. Backfill: -- ft.
Material: n/a
L. Top of Casing Height: n/a ft.
M. Protective Cover Diameter: 4 in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-14**

Project *Alameda Pt CTO 133* Owner *US Navy*

Location *Alameda, CA* Proj. No. *108816*

Surface Elev. (msl) *16.48 ft.* Total Hole Depth *11.0 ft.* North *470399* East *1481983*

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter *8 in.*

Screen: Dia *2 in.* Length *5 ft.* Type/Size *Sch 40 PVC/0.020 in.*

Casing: Dia *2 in.* Length *6 ft.* Type *Sch 5, Type 304, Stainless Steel*

Fill Material *See Comments* Rig/Core *Geoprobe 7730DT*

Drill Co. *WDC Exploration & Wells* Method *Hollow Stem Auger*

Driller *J. Zimmer/J. Trujillo* Log By *Eugene Mullenmeister* Date *6/6/06* Permit # *W2006-0446*

Checked By *Eugene Mullenmeister, PG* C57 License No. *283326*

COMMENTS

Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

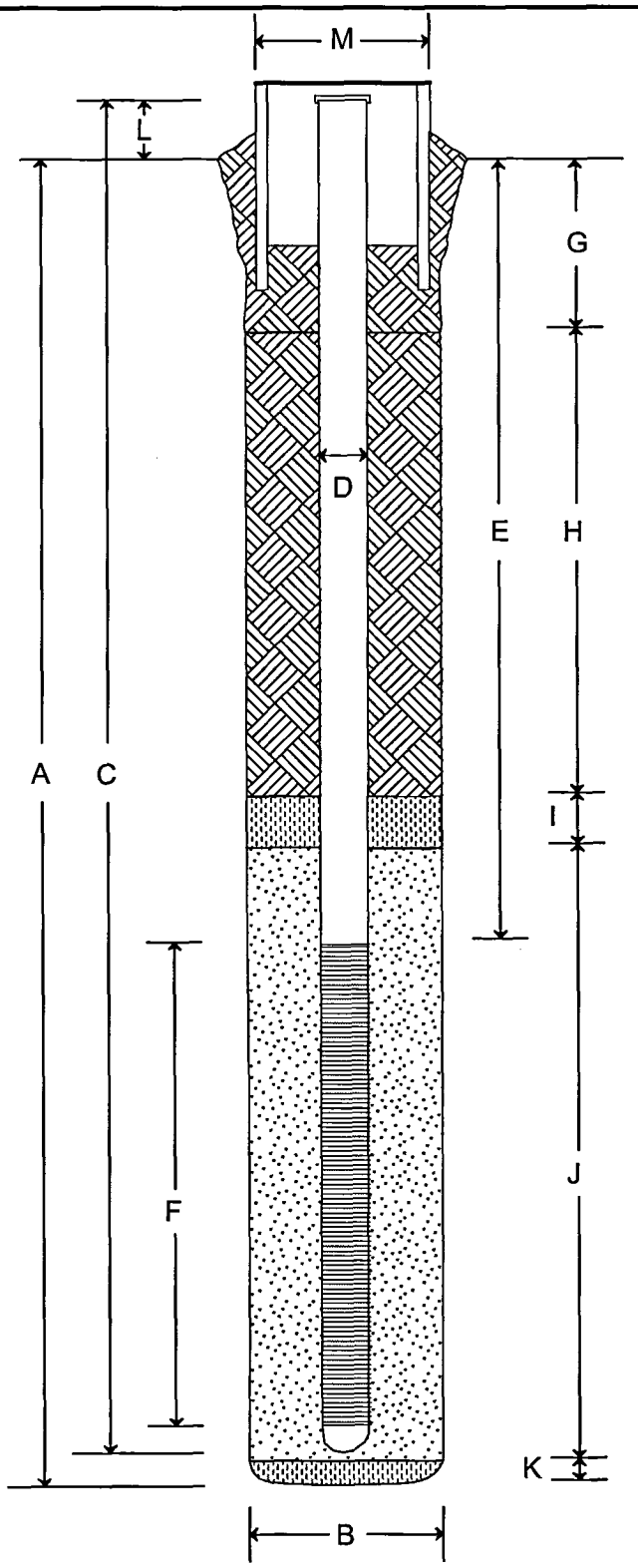
Surface elevation value reflects surveyed raised floor.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery / Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
						Depths are below ground level.
0						Initial hole cleared for utilities to five feet with air-knife and backfilled with air-knifed cuttings. Cuttings above 5 feet not described.
2						
4						
		0.0				SILTY SAND; olive gray (5Y 4/2); 85% fine to medium grained sand; 15% silt; wet
6						
8					SM	
10						
12						TD=11 ft
						Note: Soil descriptions were generated from soil grab sample specimens collected from the veins of hollow stem auger flytes. As a result, the depths of all descriptions and soil horizon boundaries are approximate.
14						

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0446

BORING/WELL NO.: MW4-2-14
TOP OF CASING ELEV.: n/a (MSL)
CEMENT FLOOR ELEV.: 16.48 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth: 11 ft.
B. Boring Diameter: 8 in.
Drilling Method: Hollow Stem Auger

WELL CONSTRUCTION

C. Casing Length (BGL): 11 ft.
Material: Sch 5, Type 304, Stainless Steel
D. Casing Diameter: 2 in.
E. Depth to Top of Screen: 6 ft.
F. Screen Length: 5 ft.
Slotted Interval from: 6 to 11 ft.
Slot Type: continuous wrap SS
Slot Size: 0.020 in.
G. Surface Seal: -- ft.
Seal Material: n/a
H. Annular Seal: 3 ft.
Seal Material: Baselite I-II-V cement
I. Transition Sand: 1 ft.
Transition Material: RMC Pacific #60 sand
J. Filter Pack: 7 ft.
Material: RMC Pacific-Lapis Lustre # 2/16 sand
K. Backfill: -- ft.
Material: n/a
L. Top of Casing Height: n/a ft.
M. Protective Cover Diameter: 4 in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-15**

Project *Alameda Pt CTO 133* Owner *US Navy*

Location *Alameda, CA* Proj. No. *108816*

Surface Elev. (msl) *16.49 ft.* Total Hole Depth *31.0 ft.* North *470339* East *1481937*

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter *8 in.*

Screen: Dia *2 in.* Length *5 ft.* Type/Size *Sch 40 PVC/0.020 in.*

Casing: Dia *2 in.* Length *26 ft.* Type *Sch 5, Type 304, Stainless Steel*

Fill Material *See Comments* Rig/Core *Geoprobe 7730DT*

Drill Co. *WDC Exploration & Wells* Method *Hollow Stem Auger*

Driller *J. Zimmer/J. Trujillo* Log By *Eugene Mullenmeister* Date *6/7/06* Permit # *W2006-0447*

Checked By *Eugene Mullenmeister, PG* C57 License No. *283326*

COMMENTS

Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

Surface elevation value reflects surveyed raised floor.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
							Depths are below ground level.
0							Initial hole cleared for utilities to five feet with air-knife and backfilled with air-knifed cuttings. Cuttings above 5 feet not described.
2							
4							
6							SILTY SAND; grayish brown (2.5Y 5/2); 80% fine to medium grained sand; 20% silt; wet
8							
10							
12						SM	
14							
16							
18							POORLY GRADED SAND WITH SILT; light olive brown (2.5Y 5/4); 92% fine to medium grained sand; 8% silt; wet
20		0.0				SP-SM	
22							
24							

Continued Next Page

Drilling Log

Monitoring Well **MW4-2-15**

Project *Alameda Pt CTO 133* Owner *US Navy*

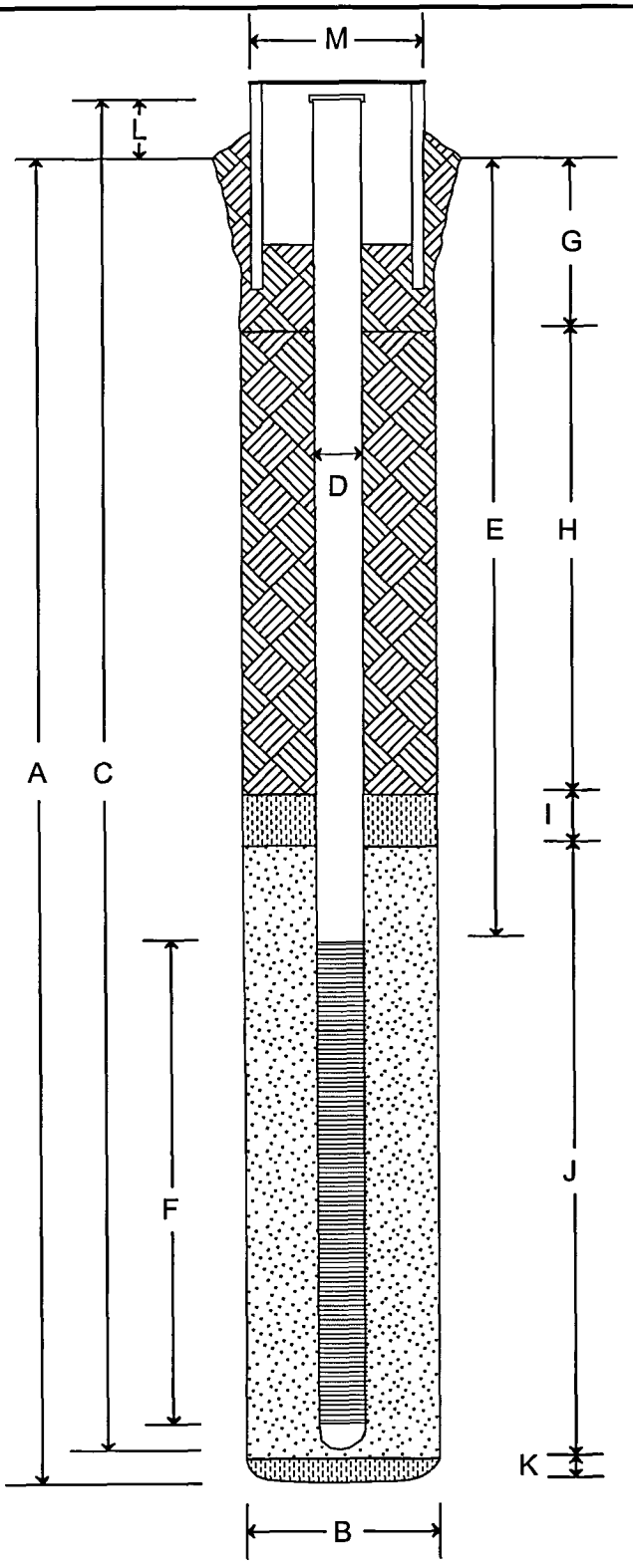
Location *Alameda, CA* Proj. No. *108816*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery / Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
26						*Continued* POORLY GRADED SAND WITH SILT; light olive brown (2.5Y 5/4); 92% fine to medium grained sand; 8% silt; wet
28					SP-SM	
30						
32						TD=31 ft
34						Note: Soil descriptions were generated from soil grab sample specimens collected from the veins of hollow stem auger flytes. As a result, the depths of all descriptions and soil horizon boundaries are approximate.
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						
58						

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0447

BORING/WELL NO.: MW4-2-15
TOP OF CASING ELEV.: n/a (MSL)
CEMENT FLOOR ELEV.: 16.49 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth: 31 ft.
B. Boring Diameter: 8 in.
Drilling Method: Hollow Stem Auger

WELL CONSTRUCTION

C. Casing Length (BGL): 31 ft.
Material: Sch 5, Type 304, Stainless Steel
D. Casing Diameter: 2 in.
E. Depth to Top of Screen: 26 ft.
F. Screen Length: 5 ft.
Slotted Interval from: 26 to 31 ft.
Slot Type: continuous wrap SS
Slot Size: 0.020 in.
G. Surface Seal: -- ft.
Seal Material: n/a
H. Annular Seal: 22.25 ft.
Seal Material: Baselite I-II-V cement
I. Transition Sand: 0.95 ft.
Transition Material: RMC Pacific #60 sand
J. Filter Pack: 7.3 ft.
Material: RMC Pacific-Lapis Lustre # 2/16 sand
K. Backfill: -- ft.
Material: n/a
L. Top of Casing Height: n/a ft.
M. Protective Cover Diameter: 4 in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-16**

Project: Alameda Pt CTO 133 | Owner: US Navy
Location: Alameda, CA | Proj. No.: 108816
Surface Elev. (msl): 16.46 ft. | Total Hole Depth: 14.0 ft. | North: 470359 | East: 1481974
Top of Casing: NA | Water Level Initial: ▽ 4.3 ft. | Static: NA | Diameter: 8 in.
Screen: Dia: 2 in. | Length: 5 ft. | Type/Size: Sch 40 PVC/0.020 in.
Casing: Dia: 2 in. | Length: 9 ft. | Type: Sch 5, Type 304, Stainless Steel
Fill Material: See Comments | Rig/Core:
Drill Co.: WDC Exploration & Wells | Method: Hollow Stem Auger
Driller: J. Zimmer/J. Trujillo | Log By: Garrick Anderson, CPG | Date: 7/7/06 | Permit #: W2006-0448
Checked By: Eugene Mullenmeister, PG | C57 License No.: 283326

COMMENTS
Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

Surface elevation value reflects surveyed raised floor.

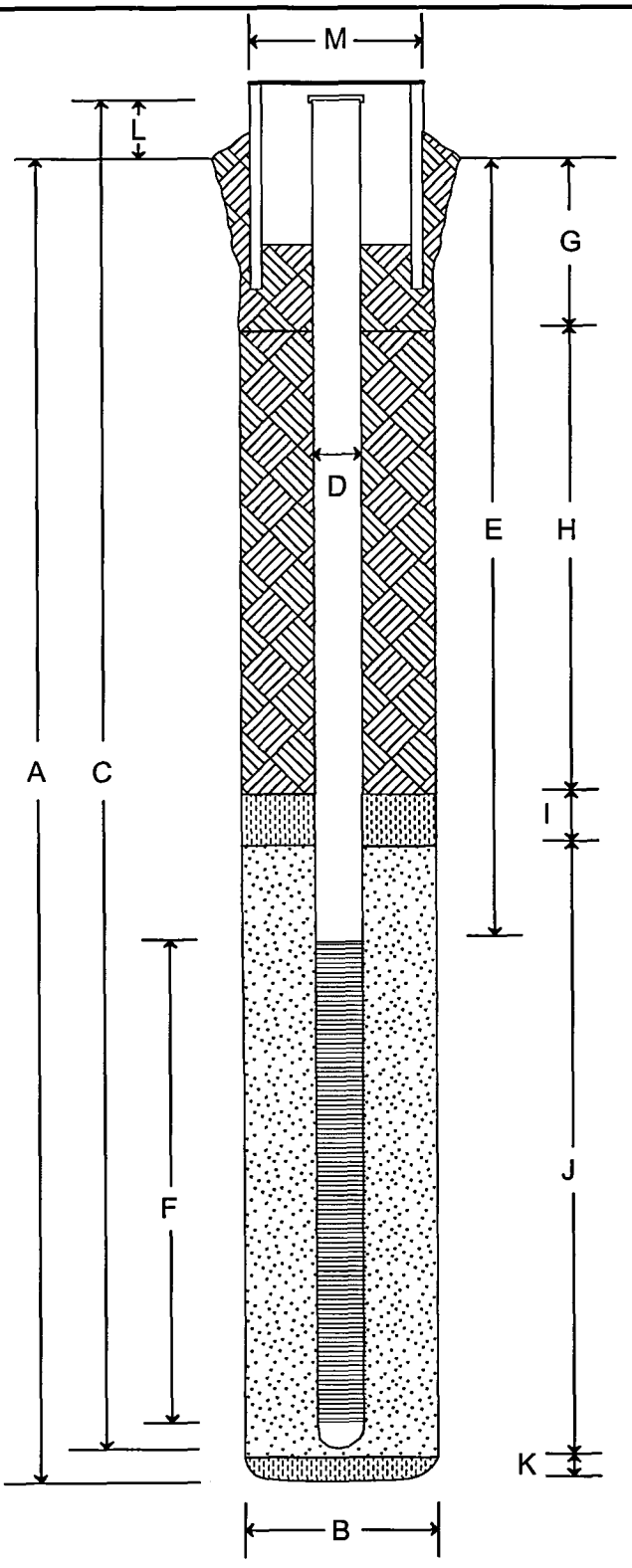
Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
							Depths are below ground level.
0							Initial hole cleared for utilities to five feet with hand auger. Cuttings above 5 feet not described.
4 ▽							POORLY GRADED SAND; brown (10YR 5/3); fine grained sand; trace silt; wet
14						SP / ML	~5 inches of Silt near bottom. TD=14 ft

Note: Soil descriptions were generated from soil grab sample specimens collected from the veins of hollow stem auger flytes. As a result, the depths of all descriptions and soil horizon boundaries are approximate.

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0448

BORING/WELL NO.: MW4-2-16
TOP OF CASING ELEV.: n/a (MSL)
CEMENT FLOOR ELEV.: 16.46 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth 14 ft.
B. Boring Diameter 8 in.
Drilling Method Hollow Stem Auger

WELL CONSTRUCTION

C. Casing Length (BGL) 14 ft.
Material Sch 5, Type 304, Stainless Steel
D. Casing Diameter 2 in.
E. Depth to Top of Screen 9 ft.
F. Screen Length 5 ft.
Slotted Interval from 9 to 14 ft.
Slot Type continuous wrap SS
Slot Size 0.020 in.
G. Surface Seal -- ft.
Seal Material n/a
H. Annular Seal 6 ft.
Seal Material Baselite I-II-V cement
I. Transition Sand 1 ft.
Transition Material RMC Pacific #60 sand
J. Filter Pack 7 ft.
Material RMC Pacific-Lapis Lustre # 2/16 sand
K. Backfill -- ft.
Material n/a
L. Top of Casing Height n/a ft.
M. Protective Cover Diameter 4 in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-17**

Project: Alameda Pt CTO 133 | Owner: US Navy
Location: Alameda, CA | Proj. No.: 108816
Surface Elev. (msl): 16.48 ft. | Total Hole Depth: 31.0 ft. | North: 470353 | East: 1481973
Top of Casing: NA | Water Level Initial: NA | Static: NA | Diameter: 8 in.
Screen: Dia: 2 in. | Length: 5 ft. | Type/Size: Sch 40 PVC/0.020 in.
Casing: Dia: 2 in. | Length: 26 ft. | Type: Sch 5, Type 304, Stainless Steel
Fill Material: See Comments | Rig/Core: Geoprobe 7730DT
Drill Co.: WDC Exploration & Wells | Method: Hollow Stem Auger
Driller: J. Zimmer/J. Trujillo | Log By: Eugene Mullenmeister | Date: 6/6/06 | Permit #: W2006-0557
Checked By: Eugene Mullenmeister, PG | C57 License No.: 283326

COMMENTS
Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

Surface elevation value reflects surveyed raised floor.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery / Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
						Depths are below ground level.
0						Initial hole cleared for utilities to five feet with air-knife and backfilled with air-knifed cuttings. Cuttings above 5 feet not described.
2						
4						
6						SILTY SAND; very dark grayish brown (10YR 3/2); 85% fine grained sand; 15% silt; wet
8						
10					SM	Becomes light yellowish brown (10YR 5/4) at 9 feet. Silt content increases to 20%.
12						
14		0.0				
16						WELL GRADED SAND WITH SILT; light yellowish brown (10YR 6/4); 90% fine to medium grained sand; 10% silt; wet
18						
20					SW	
22						
24						

Continued Next Page

Drilling Log

Monitoring Well **MW4-2-17**

Project *Alameda Pt CTO 133* Owner *US Navy*

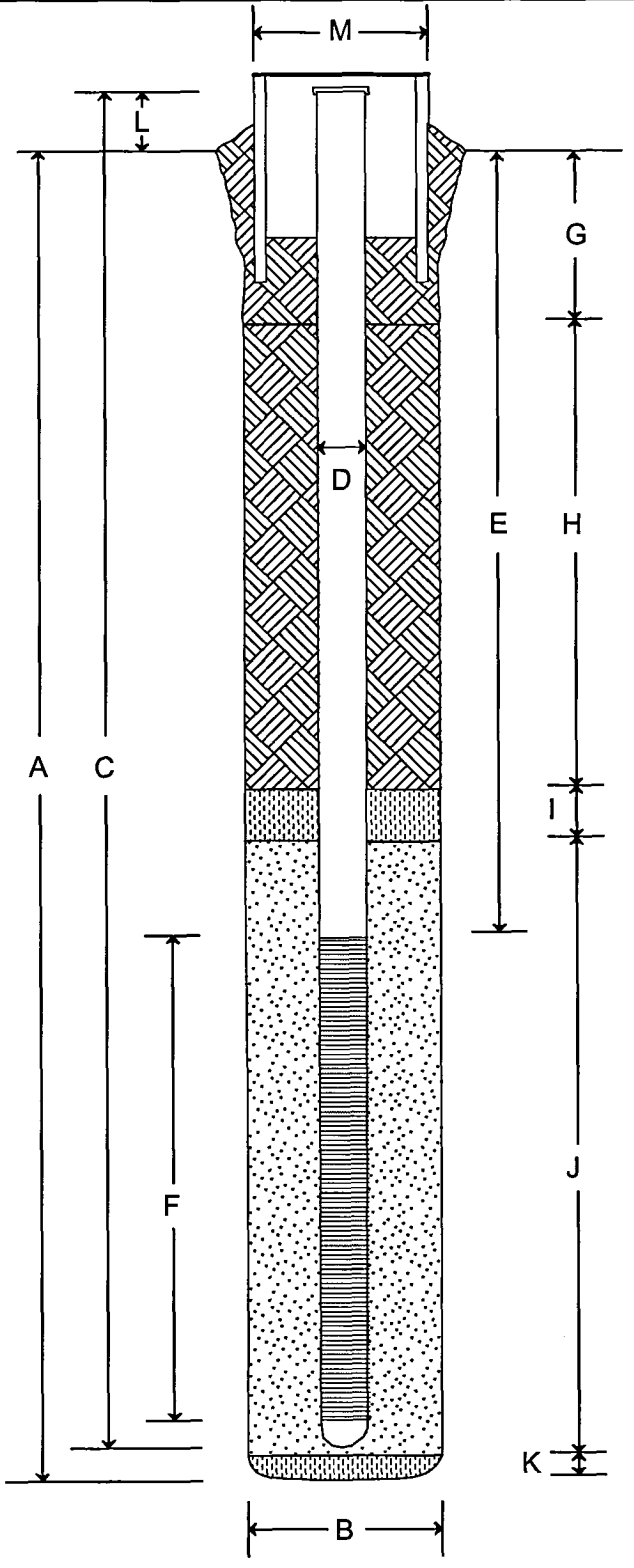
Location *Alameda, CA* Proj. No. *108816*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery / Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
26						*Continued* WELL GRADED SAND WITH SILT; light yellowish brown (10YR 6/4); 90% fine to medium grained sand; 10% silt; wet
28					SW	
30						
32						TD=30 ft
34						Note: Soil descriptions were generated from soil grab sample specimens collected from the veins of hollow stem auger flytes. As a result, the depths of all descriptions and soil horizon boundaries are approximate.
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						
58						

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0557

BORING/WELL NO.: MW4-2-17
TOP OF CASING ELEV.: n/a (MSL)
CEMENT FLOOR ELEV.: 16.48 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth	31	ft.
B. Boring Diameter	8	in.
Drilling Method	Hollow Stem Auger	

WELL CONSTRUCTION

C. Casing Length (BGL)	31	ft.
Material	Sch 5, Type 304, Stainless Steel	
D. Casing Diameter	2	in.
E. Depth to Top of Screen	26	ft.
F. Screen Length	5	ft.
Slotted Interval from	26 to 31	ft.
Slot Type	continuous wrap SS	
Slot Size	0.020	in.
G. Surface Seal	--	ft.
Seal Material	n/a	
H. Annular Seal	22.2	ft.
Seal Material	Baselite I-II-V cement	
I. Transition Sand	1.8	ft.
Transition Material	RMC Pacific #60 sand	
J. Filter Pack	7	ft.
Material	RMC Pacific-Lapis Lustre # 2/16 sand	
K. Backfill	--	ft.
Material	n/a	
L. Top of Casing Height	n/a	ft.
M. Protective Cover Diameter	4	in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-18**

Project *Alameda Pt CTO 133* Owner *US Navy*

Location *Alameda, CA* Proj. No. *108816*

Surface Elev. (msl) *16.48 ft.* Total Hole Depth *12.0 ft.* North *470459* East *1481932*

Top of Casing *NA* Water Level Initial ▽ *4.5 ft.* Static *NA* Diameter *8 in.*

Screen: Dia *2 in.* Length *5 ft.* Type/Size *Sch 40 PVC/0.020 in.*

Casing: Dia *2 in.* Length *6.5 ft.* Type *Sch 5, Type 304, Stainless Steel*

Fill Material *See Comments* Rig/Core *Geoprobe 6620DT*

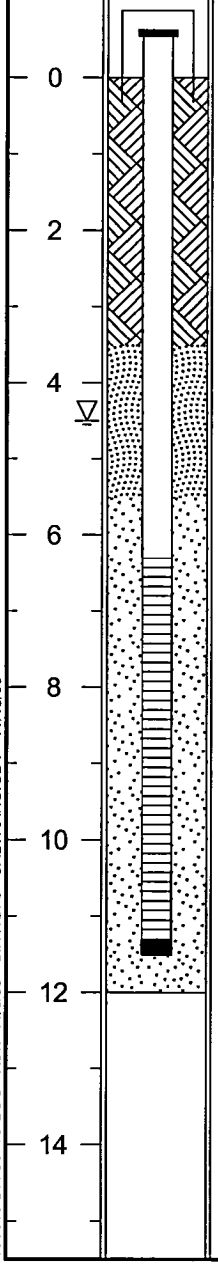
Drill Co. *ResonantSonic International* Method *Hollow Stem Auger*

Driller *J. Ambriz* Log By *Joe Strack* Date *8/28/06* Permit # *W2006-0721*

Checked By *Eugene Mullenmeister, PG* C57 License No. *283326*

COMMENTS
Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

Surface elevation value reflects surveyed raised floor.

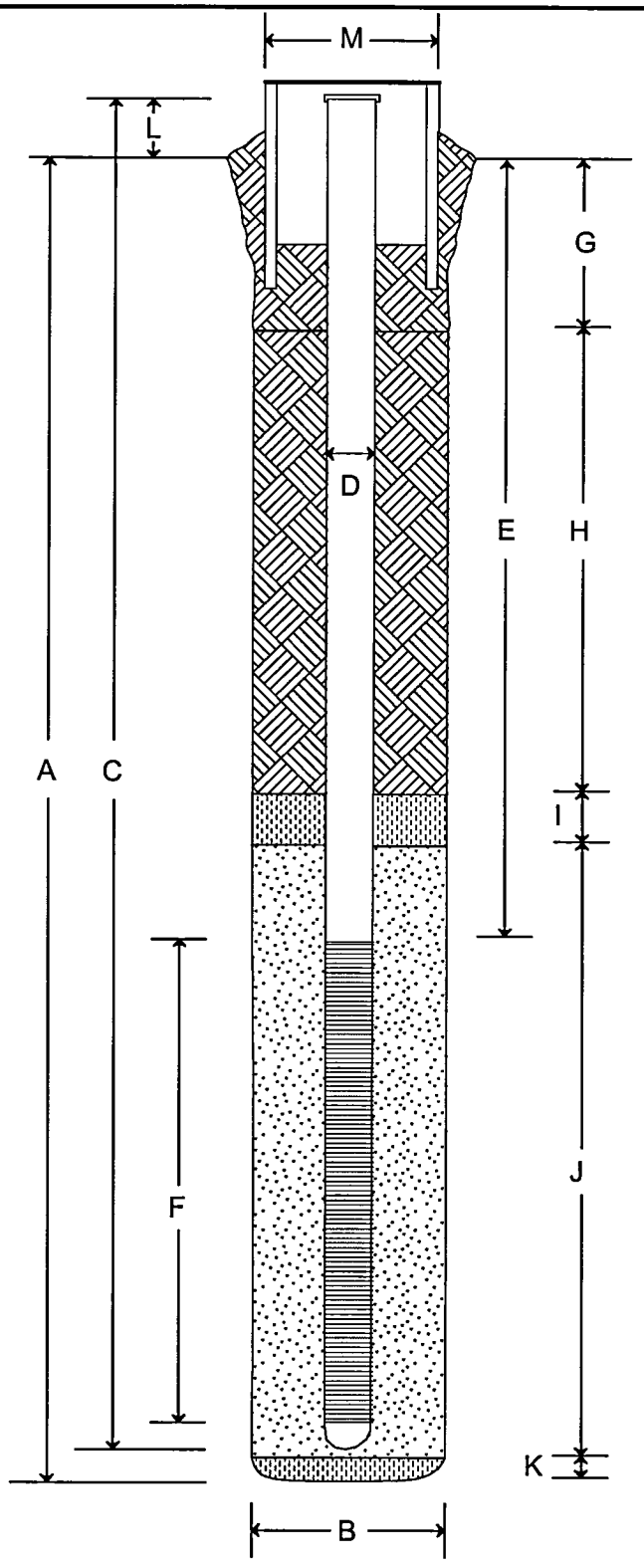


Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
							Depths are below ground level.
0							Asphalt and concrete debris.
2							POORLY GRADED SAND WITH SILT; dark yellowish brown; 90% very fine to fine sand; 10% silt; medium dense; noncohesive; moist
4 ▽						SP	Concrete debris near 5 feet.
6							SILTY SAND; moderately yellowish brown; very fine sand; 20% silt; wet
8						SM	
10							
12							TD=11.5 ft
14							Note: Soil descriptions were generated from soil grab sample specimens collected from the veins of hollow stem auger flytes. As a result, the depths of all descriptions and soil horizon boundaries are approximate.

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0721

BORING/WELL NO.: MW4-2-18
TOP OF CASING ELEV.: n/a (MSL)
CEMENT FLOOR ELEV.: 16.48 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth: 12 ft.
B. Boring Diameter: 8 in.
Drilling Method: Hollow Stem Auger

WELL CONSTRUCTION

C. Casing Length (BGL): 11.5 ft.
Material: Sch 5, Type 304, Stainless Steel
D. Casing Diameter: 2 in.
E. Depth to Top of Screen: 6.3 ft.
F. Screen Length: 5 ft.
Slotted Interval from: 6.3 to 11.3 ft.
Slot Type: continuous wrap SS
Slot Size: 0.020 in.
G. Surface Seal: -- ft.
Seal Material: n/a
H. Annular Seal: 3.5 ft.
Seal Material: Baselite I-II-V cement
I. Transition Sand: 2 ft.
Transition Material: RMC Pacific #60 sand
J. Filter Pack: 6 ft.
Material: RMC Pacific-Lapis Lustre # 2/16 sand
K. Backfill: -- ft.
Material: n/a
L. Top of Casing Height: n/a ft.
M. Protective Cover Diameter: 4 in.

MSL = mean sea level
BGL = below ground level

Drilling Log

Monitoring Well **MW4-2-19**

Project: Alameda Pt CTO 133 | Owner: US Navy
Location: Alameda, CA | Proj. No.: 108816
Surface Elev. (msl): 16.51 ft. | Total Hole Depth: 12.5 ft. | North: 470335 | East: 1481920
Top of Casing: NA | Water Level Initial: ▽ 5.0 ft. | Static: NA | Diameter: 8 in.
Screen: Dia 2 in. | Length: 5 ft. | Type/Size: Sch 40 PVC/0.020 in.
Casing: Dia 2 in. | Length: 6.5 ft. | Type: Sch 5, Type 304, Stainless Steel
Fill Material: See Comments | Rig/Core: Geoprobe 6620DT
Drill Co.: ResonantSonic International | Method: Hollow Stem Auger
Driller: | Log By: Joe Strack | Date: 8/24/06 | Permit #: W2006-0722
Checked By: Eugene Mullenmeister, PG | C57 License No.: 283326

COMMENTS
Annular seal - Cement, Type I-II-V
Transition sand - RMC Pacific #60 sand
Filter Pack - RMC Pacific, Lapis Lustre #2/16 sand
Well Casing - Sch 5, Type 304 Stainless Steel (SS)
Screen - 0.020 in continuous wrap, Sch 5, Type 304 SS
Protective Casing - 4 in dia Sch 40 CPVC

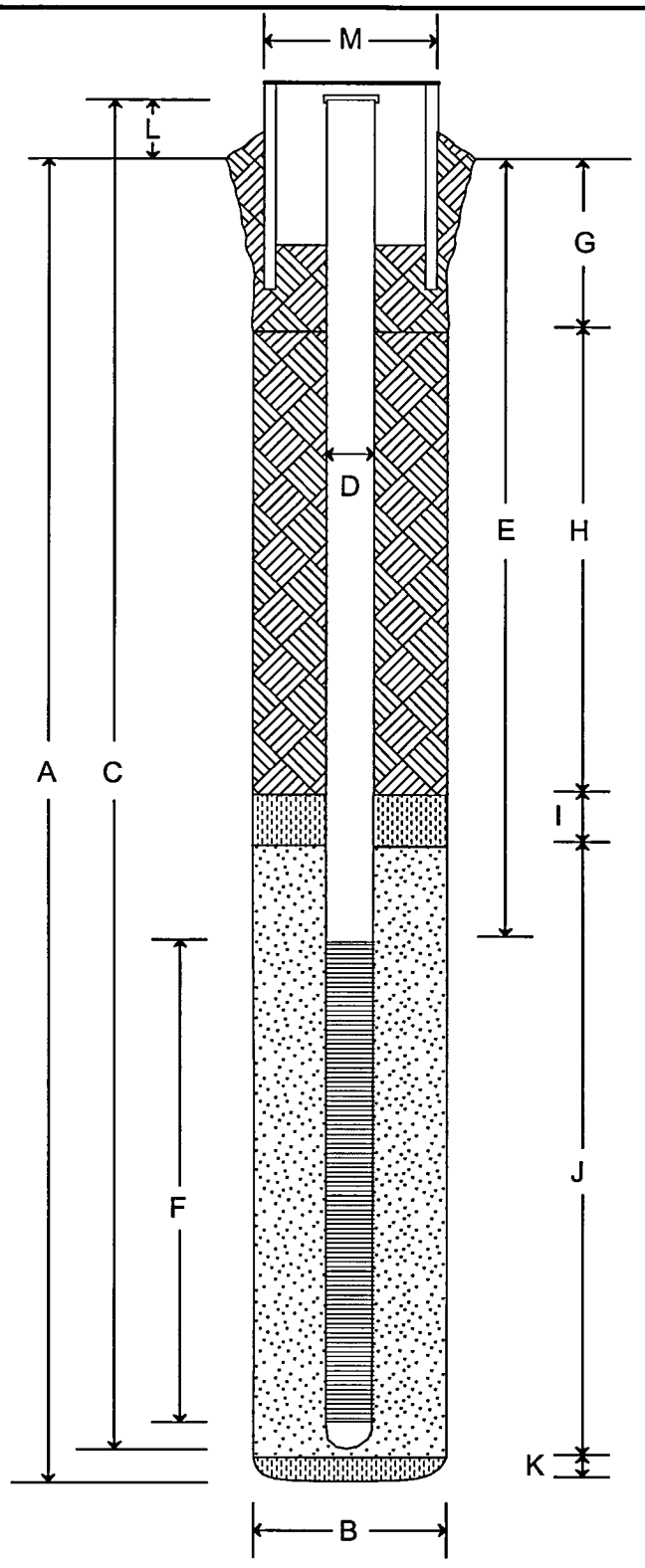
Surface elevation value reflects surveyed raised floor.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / % Recovery / Blow Count / Recovery	Graphic Log	ASTM/USCS	Description (Color, Texture, Structure) Geologic Descriptions are Based on ASTM/USCS.
						Depths are below ground level.
0					SP-SM	POORLY GRADED SAND WITH SILT AND CLAY; olive brown; 90% very fine to fine sand; 10% fines; loose; poor cohesion; slightly moist
2						
4						
▽						
6					SM	SILTY SAND; wet to saturated
8						
10						
12						TD=11.5 ft
14						Note: Soil descriptions were generated from soil grab sample specimens collected from the veins of hollow stem auger flytes. As a result, the depths of all descriptions and soil horizon boundaries are approximate.

SINGLE COMPLETION WELL DETAILS

PROJECT NUMBER: 108816
PROJECT NAME: Alameda Pt CTO 133
COUNTY: Alameda
WELL PERMIT NO.: W2006-0722

BORING/WELL NO.: MW4-2-19
TOP OF CASING ELEV.: n/a (MSL)
CEMENT FLOOR ELEV.: 16.51 ft. (MSL)
DATUM: CCS27, Zone 3, NAVD88



EXPLORATION BORING

A. Total Depth 12.5 ft.
B. Boring Diameter 8 in.
Drilling Method Hollow Stem Auger

WELL CONSTRUCTION

C. Casing Length (BGL) 11.5 ft.
Material Sch 5, Type 304, Stainless Steel
D. Casing Diameter 2 in.
E. Depth to Top of Screen 6.3 ft.
F. Screen Length 5 ft.
Slotted Interval from 6.3 to 11.3 ft.
Slot Type continuous wrap SS
Slot Size 0.020 in.
G. Surface Seal -- ft.
Seal Material n/a
H. Annular Seal 3.5 ft.
Seal Material Baselite I-II-V cement
I. Transition Sand 1.25 ft.
Transition Material RMC Pacific #60 sand
J. Filter Pack 5.2 ft.
Material RMC Pacific-Lapis Lustre # 2/16 sand
K. Backfill -- ft.
Material n/a
L. Top of Casing Height n/a ft.
M. Protective Cover Diameter 4 in.

MSL = mean sea level
BGL = below ground level

Appendix D
System Installation Test Report

Installation and Testing Report for SPH Operations & Maintenance for Plume 4-2, Former Alameda NAS, Alameda, CA

THERMAL REMEDIATION services inc.

Submitted October 23, 2006

Prepared by Thermal Remediation Services, Inc
for Shaw Environmental & Infrastructure, Inc.

Purpose

The purpose of this report is to present a brief description of Thermal Remediation Services, Inc. (TRS) system installation and start up testing methods and results for the remedial work at Plume 4-2, Former Alameda NAS, Alameda, CA.

System Construction

Subsurface installation of the electrodes commenced on May 23, 2006 and continued until July 18, 2006 when drilling activities were stopped, at Shaw's direction, to further investigate contaminated liquids found in the vats of the Plate Shop, inside Building 360. Subsurface installation resumed on September 7, 2006 and concluded on September 19, 2006. Ninety-one electrodes, seventeen groundwater monitoring wells, and fourteen temperature monitoring points were installed by the TRS drilling subcontractor. The as-built information for the above mentioned system components are attached with this document.

The surface equipment was delivered in three different phases, with electrode cables and the vapor recovery (VR) blower received on June 27, 2006, the Power Control Unit (PCU) received on June 29, 2006, and the condenser unit/cooling tower received on September 19, 2006. The condenser unit and the cooling tower were placed inside a 20' x 40' x 4" secondary containment berm. Interlock wiring was completed on all of TRS' equipment on October 3, 2006.

The VR blower unit is a skid mounted 40 horsepower rotary displacement blower, equipped with inlet and discharge silencers, housed inside an insulated sound enclosure. The control components are permanently mounted on the exterior of the enclosure for simplification of installation and operation. This unit was tested at the manufacturer's facility prior to delivery and has been field tested for proper operation at one other site prior to installation at Alameda NAS and maintenance has been completed in accordance with the manufacturer's specifications.

The TRS PCU is a 2,000 kilowatt (kW), self contained, variable output transformer. The unit is housed in an 8' x 8' x 40' modified shipping container. A control room is situated at one end where the unit can be operated, manually or remotely, by the integrated computer and programmable logic controller (PLC) system.

The TRS steam condenser consists of two skid-mounted units. One unit contains a water-cooled plate heat exchanger, two condensate storage tanks (knock-out pots), condensate pump, condensate filter, recycle pump, blowdown pump, and the control components and valves to operate the system, all housed in an insulated, galvanized steel enclosure. The second unit consists of a cooling tower and cooling fan. These units were factory tested for leaks and functionality prior to shipment to the site.

Vapor recovery piping and treatment system construction commenced on July 17, 2006 and was completed with the addition of the vapor granular activated carbon (GAC) vessels on October 7, 2006. The VR system is constructed with schedule 40 CPVC (chlorinated

polyvinyl chloride) pipe and schedule 80 CPVC pipe fittings influent of the condenser unit. Post condenser materials include schedule 80 PVC pipe and fittings, polypropylene cam and lock fittings, and PVC suction hose.

Electrical power was brought to the site and connected to the PCU during the week ending September 1, 2006.

The liquid hold up vessel (6,500 gallon high density polyethylene tank) was delivered to the site on September 26, 2006 and placed inside a 24' diameter by 28" high secondary containment berm. A float switch was installed in the tank and interlocked to shut down the SPH system in the event of a high tank liquid level condition.

The condensate treatment system construction was initiated on October 3, 2006 with the arrival of the liquid GAC vessels. Construction of the condensate treatment system was completed on October 17, 2006. The system is constructed with schedule 80 CPVC pipe, fittings, and PEX® tubing and fittings.

As-built drawings for the installation locations of each of the components are attached with this document.

System Quality Inspections and Testing

Quality control inspections of the heating and treatment system were performed in accordance with TRS' standard operating procedures, and are divided into five steps:

1. Integrity and completion of the vapor recovery piping
2. Function testing of the treatment system components
3. Step-and-touch voltage safety checks
4. Subsurface energy application evaluation (start up)
5. Subsurface vacuum influence evaluation

Vapor Recovery Piping Inspections

Inspection of the vapor recovery system requires first a visual inspection of each of the joined components (glue joints) as well as inspecting the integrity of the vapor recovery piping itself. Upon achieving a satisfactory result of the visual inspection, the inspection is conducted again with the vacuum blower operating, simulating normal site conditions. This test involves visually and audibly inspecting the entire VR piping system for leaks.

The vacuum blower was activated for testing on October 7, 2006, at an operating vacuum of approximately 3" Hg. Due to higher than expected groundwater levels in the treatment area, the applied field vacuum was limited during testing to prevent the collection of excessive water from the subsurface. This was accomplished by opening the dilution air valve at the vapor recovery blower inlet. Visual and audible inspections were conducted over a span of 90 minutes. No leaks were found in the VR piping system.

On October 18, 2006, vacuum gauge connections were installed at the end of each vapor recovery header (thirty total) to verify vacuum influence over the entire VR piping system. All thirty test locations indicated negative pressures, confirming vacuum application throughout the entire VR piping system.

Treatment System Function Tests

Testing of the treatment system commenced on September 25, 2006. The condenser cooling tower sump was filled with water and the condenser operation was initiated. Items inspected include checks for leaks and functionality (hand/off/auto switches, float switches, valves), and the ability to maintain normal operation. Once functionality was determined satisfactory, equipment interlock testing commenced. Testing of interlocks took place between September 27, 2006 and October 6, 2006 and performed as designed.

The condensate treatment system was tested for readiness by initiating the system under normal operating conditions and visually inspecting all connections for leaks. The system was also verified for the proper operational parameters (flow, differential pressures, and applied field vacuum) on all gauges and valves. The discharge line to the POTW discharge point was tested with potable water and inspected for leaks at each connection over the entire length of the line. Final testing was completed on October 17, 2006. No leaks were found in the conveyance piping, liquid granular activated carbon vessels, and the treated condensate discharge line to the POTW discharge point. Each of these tests was deemed satisfactory. An as-built process-flow diagram is included with this document.

Step-and-Touch Voltage Safety Tests

This test is a critical safety test for application of the heating technology. Refer to the submitted Standard Operating Procedures (SOPs) "*ALA05 Voltage Safety Survey SOP 1.0 100406 acf.pdf*" and "*ALA05 Exclusion Zone Entry SOP 2.0 100506 acf.pdf*". The electrode field was initially energized on October 3, 2006 for step and touch, and step and step voltage safety testing. No voltage potential in any area around the site was greater than the 15 volt limit in dry conditions. After a rain event on October 5, 2006, the grout seals on eight of the electrodes on the south side of the exterior of the Building 360 annex had elevated voltage potentials. TRS has electrically isolated the grout seals with a suitable elastomer to provide the required electrical isolation and covered this material with plywood to protect the elastomer from the outdoor elements. An additional voltage survey was conducted on October 18, 2006, after the final electrode cabling configuration was completed. No voltage potential in any area around the site was greater than the 15 volt limit. The voltage survey results are attached with this document.

Subsurface Energy Application Evaluation

System testing and energy application evaluation commenced on October 3, 2006. TRS initiated applying electrical energy to the electrode field to evaluate the electrical conditions of the load (treatment volume). The evaluation includes observations of cable/electrode amperage as well as an overall evaluation of the electrical balance of the load. This

evaluation was conducted over night on October 7, 2006. This pre-operation test indicates we will be operating at approximately 150 to 300 volts and well within the amperage limits of the delivery cables.

Subsurface Vacuum Influence Evaluation

Vacuum influence on the site is measured at vacuum piezometers installed at each temperature monitoring point location (14). The results of the piezometer vacuum measurements are included with this document. Due to higher than expected groundwater levels in the treatment area, the applied field vacuum is being limited to prevent collecting excessive water from the subsurface. This is accomplished by opening the dilution air valve at the vapor recovery blower inlet.

As of October 20, 2006, TRS has completed installation and testing of the SPH system at Plume 4-2, Former Alameda NAS, Alameda, CA. The system is ready for full operation, and will commence upon written approval from Shaw Environmental & Infrastructure.

Project: ALA05

Electrode, TMP, & Monitoring Well As-Built Construction Data

Date Completed	Electrode	Total (Refusal) Depth	Bottom of Casing	Bottom of Conductive Zone	Top of Conductive Zone	Bottom of Vent	Top of Vent	TRS Personnel	Other Notes
REGION 1 (20 Electrodes)									
Not Installed	C5								Not installed, due to obstruction/refusal in area
6/22/2006	C6	41	39.5	41	6.75	13.5	3	Cossins	
6/22/2006	C7	41	39.5	41	7	13.5	3	Cossins	
6/[illegible]/2006	D4	41	39.5	41	7	13.5	3	Cossins	
[illegible]/2006	D5	41	39.5	41	7	13.5	3	Cossins	
[illegible]/2006	D6	41	39.5	41	7	13.5	3	Cossins	
[illegible]/2006	D7	41	39.5	41	7	13.5	3	Cossins	
7/[illegible]/2006	D8	41	39.5	41	7	13.5	3	Cossins	
7/8/2006	E4	41	39.5	41	7	13.5	3	Cossins	
6/21/2006	E5	41	39.5	41	7	13.5	3	Cossins	Electrode had to be re-drilled due to bridging problems during consruction.
6/15/2006	E6	41	40.5	41	7	14.5	3' 1"	Pierce	
7/10/2006	E7	41	39.5	41	7	13.5	3	Cossins	
6/2/2006	E8	41	39.5	41	7	13.5	3	Knight	
6/23/2006	E9	41	39.5	41	7	13.5	3	Cossins	
6/20/2006	F4	41	39.5	41	7	13.5	3	Cossins	
6/20/2006	F5	41	39.5	41	7	13.5	3	Cossins	
6/16/2006	F6	41	41	41	7	14	3' 1"	Pierce	
6/1/2006	F7	41	39.5	41	7	13.5	3	Cossins	
7/8/2006	F8	40.5	39.5	40.5	7	13.5	3	Cossins	
6/15/2006	G5	41	39.5	41	7	13.5	3	Pierce	
REGION 1 AVERAGES:		41.0	39.6	41.0	7.0	13.6	3		
REGION 2 (13 Electrodes)									
6/1/2006	F9	30.25	27.5	30.25	7	13.5	3	Cossins	
6/23/2006	F10	30	27.5	30	7	13.5	3	Cossins	
6/1/2006	G9	30.2	27.5	30.2	7	13.5	3	Cossins	
5/23/2006	G10	30	27	30	7	13.5	3	Cossins	
6/22/2006	G11	30	27.5	30	7	13.5	3	Cossins	
6/2/2006	H10	30.5	27.5	30.5	7	13.5	3	Knight	
5/30/2006	H11	30	27	30	7	13.5	3	Cossins	
6/3/2006	J11	30.5	27	30.5	7	13.5	3	Knight	
6/29/2006	J12	30	27.5	30	7	13.5	3	Cossins	
9/8/2006	K12	30	27	30	7	13.5	3	Pierce	
9/7/2006	K13	30.25	28.5	30.25	7.2	13.7	3	Pierce	
9/18/2006	L13	30	27.5	30	7	13.5	3	Rianda	
9/7/2006	L14	30	27.5	30.3	7	13.5	3	Pierce	
REGION 2 AVERAGES:		30.1	27.4	30.2	7.0	13.5	3		
REGION 3 (8 Electrodes)									
9/13/2006	M14	19	17	19	7	13.5	3	Rianda	
6/5/2006	N14	19	17	19	7	13.5	3	Bianco	
6/3/2006	N15	19.5	17	19.5	7	13.5	3	Knight	
6/4/2006	P14	19	17	19	7	13.5	3	Knight	
6/3/2006	P15	19	17	19	7	13.5	3	Knight	
6/4/2006	Q15	19.5	17	19.5	7	13.5	3	Knight	
6/3/2006	Q16	19.5	17	19.5	7	13.5	3	Knight	
6/4/2006	R16	19.5	17	19.5	7	13.5	3	Knight	
REGION 3 AVERAGES:		19.3	17	19.3	7	13.5	3		
REGION 4 (28 Electrodes)									
5/30/2006	G6	45	45	45	7	13.5	3	Knight	
7/7/2006	G7	45	45	45	7	13.5	3	Cossins	Additional grout in interior of oversleeve to adjust for off-center fit at grade surface
7/8/2006	G8	45	45	45	7	13.5	3	Cossins	
7/7/2006	H6	45	45	45	7	13.5	3	Cossins	
5/25/2006	H7	45	45	45	7	13.5	3	Cossins	
5/26/2006	H8	45.5	45	45	7	13.5	3	Knight	
6/29/2006	H9	45	45	45	7	13.5	3	Cossins	
5/25/2006	J7	45.5	45	45	7	13.5	3	Cossins	
5/31/2006	J8	45.5	45	45	7	13.5	3	Cossins	
6/29/2006	J9	45	45	36	7	13.5	3	Cossins	Re-drilled due to excessive heave up to water table surface (5' bgs), experienced more heave after re-drill, a lot of sand likely intermixed with the conductive backfill
6/4/2006	J10	45.5	45	45.5	7	13.5	3	Knight	
6/29/2006	K8	45	45	45	6.5	13.5	3	Cossins	
6/6/2006	K9	45.5	45	40	7	13.5	3	Knight	Augers left in borehole overnight, bottome five feet filled with sand
6/5/2006	K10	45	45	45	7	13.5	3	Bianco	
6/4/2006	K11	45.5	45	45.5	7	13.5	3	Knight	
5/24/2006	L9	45	44	45	7	13.5	3	Cossins	
6/5/2006	L10	45	45	45	7	13.5	3	Knight	
[illegible]/2006	L11	45	45	45	7	13.5	3	Pierce	
[illegible]/2006	L12	45	45	45	7	13.5	3	Rianda	
[illegible]/2006	M10	45	45	45	7	13.5	3	Pierce	
[illegible]/2006	M11	45	45	45	7	13.5	3	Pierce	
9/14/2006	M12	45	45	45	7	13.5	3	Rianda	
9/19/2006	M13	45	45	45	7	13.5	3	Pierce	
9/11/2006	N11	45	45	45	7	13.5	3	Pierce	
9/12/2006	N12	45	45	45	7	13.5	3	Pierce	
9/14/2006	N13	45	45	45	8	13.5	3	Rianda	
9/11/2006	P12	45	45	45	7	13.5	3	Knight	
9/13/2006	P13	45	45	45	7	13.5	3	Pierce	
REGION 4 AVERAGES:		45.1	45.0	44.5	7.0	13.5	3		
REGION 5 (23 Electrodes)									
6/27/2006	E3	36	34.5	36	7	13.5	3	Cossins	
6/16/2006	F3	41	34.5	36	7	13.5	3	Pierce	
6/19/2006	G3	36	34.6	36	7.1	13.6	3.1	Pierce	
6/19/2005	G4	36'	34.5'	36	7	13.5	3	Cossins	
6/16/2006	H4	36	35.5	36	7	14.5	3.1	Pierce	
6/16/2006	H5	36	34.5	36	7	13.5	3	Pierce	
6/27/2006	J5	36	34.5	36	7	13.5	3	Cossins	
6/1/2006	J6	36	34.25	36	7	13.25	2.8	Knight	
6/16/2006	K6	36	34.5	36	7	13.5	3	Pierce	
6/1/2006	K7	36	34.3	36	7	13.25	2.8	Knight	
6/2/2006	L7	36	34.5	36	7	13.5	3	Knight	
6/1/2006	L8	36	34.5	36	7	13.5	3	Knight	
6/6/2006	M9	36	34.5	36	7	13.5	3	Bianco	
6/6/2006	N10	36	34.5	36	7	13.5	3	Bianco	
6/13/2006	P11	36	34.5	36	7	13.5	3	Pierce	
6/12/2006	Q12	36	36	36	7	15	3.2	Bianco	
6/13/2006	Q13	36	34.5	36	7	13.5	3	Pierce	
6/14/2006	Q14	36	34.5	36	7	13.5	3	Pierce	
6/6/2006	R13	36	34.5	36	7	13.5	3	Knight	
6/13/2006	R14	36	34.5	36	7	13.5	3	Pierce	
6/14/2006	R15	36	36	36	7	15.5	3.1	Pierce	
6/15/2006	S15	36	35.5	36	7	14.5	3.1	Pierce	
6/15/2006	S16	36	34.5	36	7	13.5	3	Pierce	
REGION 5 AVERAGES:		36.2	34.7	36	7.0	13.7	3.0		
Total Site Averages:		**37.6**	**36.3**	**37.4**	**7.0**	**13.6**	**3.0**		

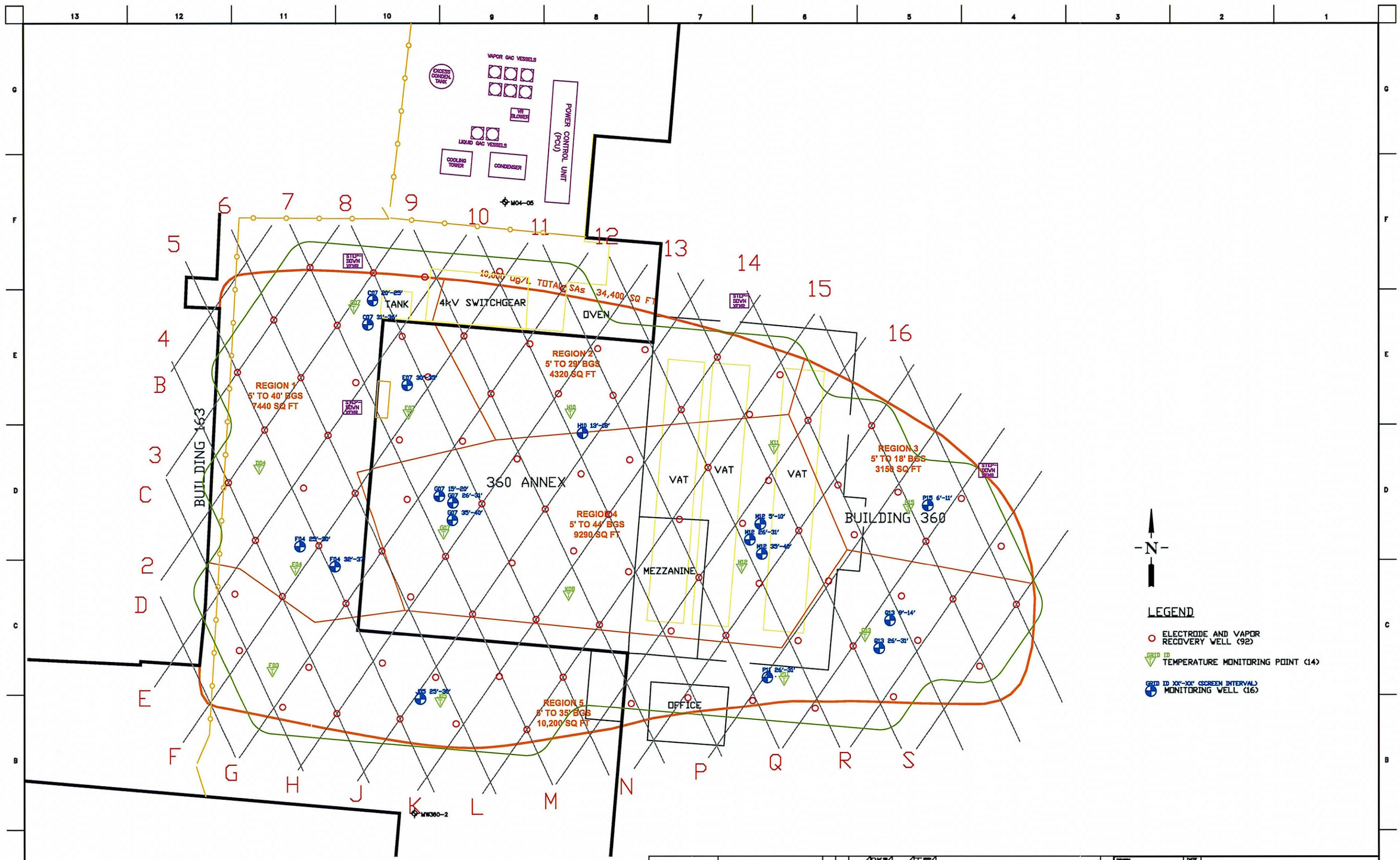
Date Completed	TMP	REGION	Grade Completion	Total Depth	Bottom of Casing	Vacuum Piezometer Installed	TRS Personnel	
6/13/2006	G07	4	Above	45.0	45	Yes	Pierce	Due to possible grout intrusion past the 3" fine sand layer, the fine sand layer is 6"
6/15/2006	P11	5	Above	35.0	35	Yes	Pierce	Due to possible grout intrusion past the 3" fine sand layer, the fine sand layer is 6"
6/15/2006	P15	3	Above	19.0	45	Yes	Pierce	Due to possible grout intrusion past the 3" fine sand layer, the fine sand layer is 6"
6/13/2006	H10	2	Above	29.0	29	Yes	Pierce	
6/14/2006	K08	4	Above	45.0	45	Yes	Pierce	
6/14/2006	J05	5	Above	35.0	35	Yes	Pierce	Due to possible grout intrusion past the 3" fine sand layer, the fine sand layer is 6"
6/16/2006	C07	1	Below	40.0	40	Yes	Pierce	Due to possible grout intrusion past the 3" fine sand layer, the fine sand layer is 6"
6/16/2006	D04	1	Below	40.0	40	Yes	Pierce	Due to possible grout intrusion past the 3" fine sand layer, the fine sand layer is 6"
6/15/2006	Q13	5	Above	35.0	35	Yes	Pierce	Due to possible grout intrusion past the 3" fine sand layer, the fine sand layer is 6"
6/16/2006	M12	4	Above	45.0	45	Yes	Pierce	Due to possible grout intrusion past the 3" fine sand layer, the fine sand layer is 6"
6/23/2006	F03	1	Above	40.0	40	Yes	Cossins	
6/23/2006	F04	5	Above	35.0	35	Yes	Cossins	
6/30/2006	E07	1	Above	40.0	40	Yes	Knight	Re-located closer to F07
9/7/2006	K11	4	Above	45.0	45	Yes	Pierce	Re-located closer to M13 to keep out of vats as per Shaw's request

Date Completed	MW	REGION	Grade Completion	Total Depth	Bottom of Casing		Shaw Personnel	
6/6/2006	4-2-14	3	Above	11.0	11		Mullenmeister	
6/6/2006	4-2-17	5	Above	31.0	31		Mullenmeister	
6/7/2006	4-2-15	5	Above	31.0	31		Mullenmeister	
6/12/2006	4-2-9	2	Above	18.0	18		Mullenmeister	
[illegible]/2006	4-2-8	4	Above	20.0	20		Mullenmeister	
[illegible]/2006	4-2-13	4	Above	40.0	40		Teo	
[illegible]/2006	4-2-11	4	Above	10.0	10		Mullenmeister	
[illegible]/2006	4-2-16	5	Above	14.0	14		Anderson	
7/7/2006	4-2-10	5	Above	30.0	30		Anderson	
7/8/2006	4-2-4	1	Above	30.0	30		Joe	
7/8/2006	4-2-6	4	Above	20.0	20		Joe	
7/9/2006	4-2-7	4	Above	31.0	31		Anderson	
7/10/2006	4-2-3	1	Above	35.0	35		Anderson	
7/11/2006	4-2-5	1	Above	37.0	37		Anderson	
7/12/2006	4-2-1	1	Above	25.0	25		Anderson	
7/12/2006	4-2-2	1	Above	36.0	36		Anderson	
7/12/2006	4-2-12	4	Above	31.0	31		Anderson	

Vacuum Influence Test **10/18/2006**

Pizeometer Location	Measured Vac (in WC)
C07	-0.80
D04	-2.30
F04	-0.05
F03	-0.16
J05	-0.35
K08	-0.25
G07	-0.10
E07	-0.01
H10	-0.08
K11	-0.34
M12	-0.09
P11	-0.07
Q13	-2.00
P15	-0.85

Blower Vac (in Hg)	Condenser Inlet Vac (in Hg)	Flowrate (SCFM)
4.5	2.5	440



THERMAL REMEDIATION services inc.

REVISION REFERENCE NO	DRAWING TITLE	RR	MF	QA BY / DATE	ENGR BY / DATE	CHK BY / DATE	REV BY / DATE	DESCRIPTION	REV
DCR-ALA05-087	ALA05-PP-01				DKS 6/13/06		TMP 6/13/06	MOVED ELECTODE, MW, AND TMP'S TO AS BUILT LOCATIONS	C
DCR-ALA05-06	ALA05-PP-01				DKS 5/26/06		DKS 5/26/06	ELIMINATE CO-LOCATED TMP AND MW.	B
DCR-ALA05-05	ALA05-PP-01				DKS 4/20/06		DKS 4/20/06	MONITORING WELL AND TMP LOCATION REVISIONS	A

REFERENCE DRAWINGS — DATE: 10-13-06

REVISIONS — CADFILE: ALA05 ASB PP ccd

DRWN	DK SEILER	DATE 5-2-06
CHECKED		
DES APVD		
ENGR	DK SEILER	5-2-06
PROJECT MANAGER	G KNIGHT	
OTHER		
QA		
APPROVED FOR IMPLEMENTATION BY / FOR / DATE		

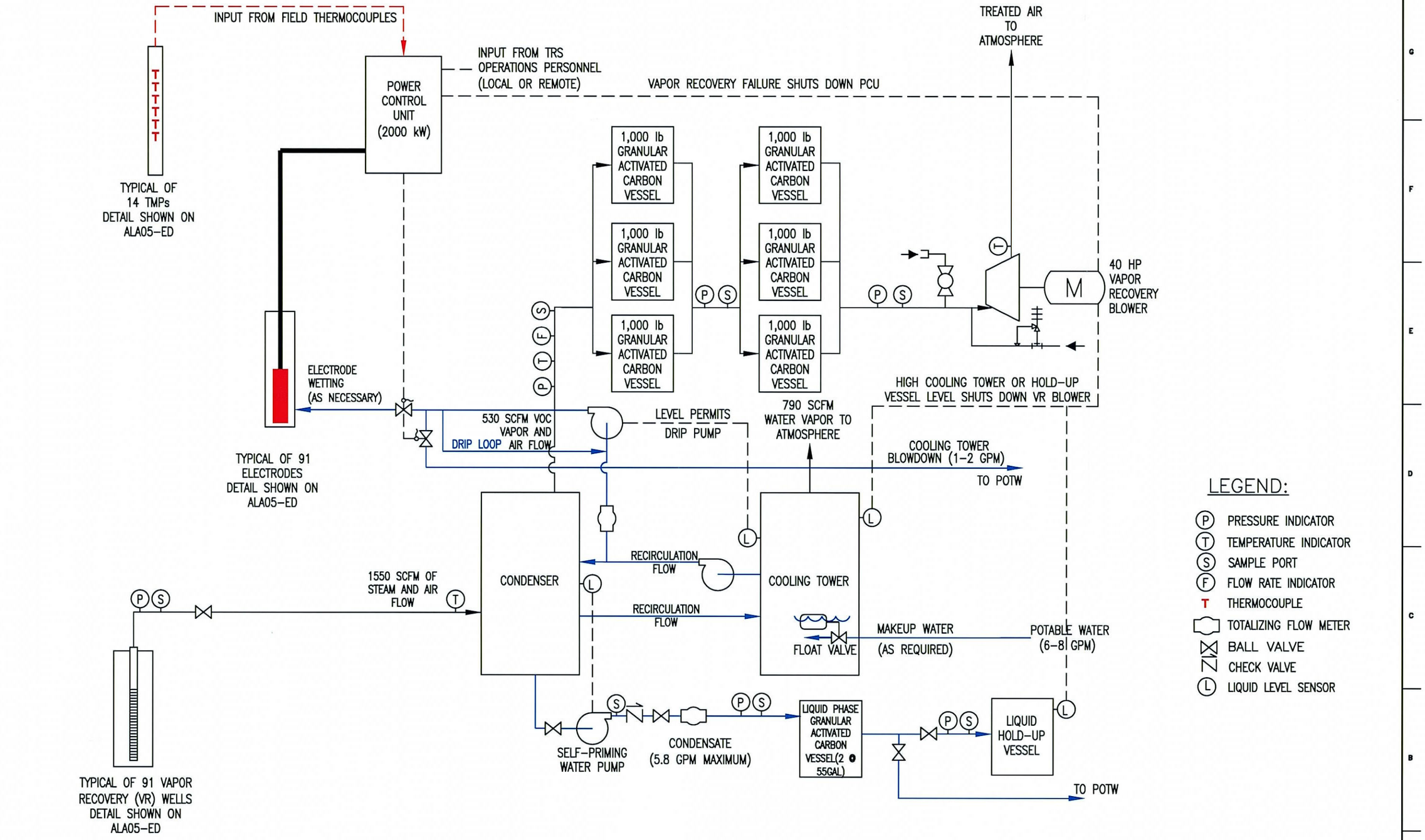
ALA05

AS-BUILT PLOT PLAN

ALAMEDA, CA

SCALE 1"=30' — SHEET NO 1 — SHEETS 1

DWG NO ALA05-ASB-PP-01 — REV D



THERMAL REMEDIATION services inc.

REVISION REFERENCE NO	DRAWING TITLE	RR	MF	QA BY / DATE	ENGR BY / DATE	CHK BY / DATE	REV BY / DATE	DESCRIPTION	REV
DCR-ALA05-08	ALA05 PFD				DKS 6/19/06		DKS 6/19/06	FINALIZED	B
DCR-ALA05-06	ALA05 PFD				DKS 6/13/06		DKS 6/13/06	ADDED LIQUID GAC	A
DCR-ALA05-04	ALA05 PFD				DKS 5/8/06		DKS 5/8/06	PFD DRAFT	

REFERENCE DRAWINGS
DATE: 6/19/06

REVISIONS
CADFILE ALA05 PFD

DRAWN D SEILER DATE 5/8/06
CHECKED
DPW APVD
ENGR D SEILER 5/8/06
PROJECT MANAGER G KNIGHT
OTHER
QA
APPROVED FOR IMPLEMENTATION
BY _____ FOR _____ DATE

ALA05 AS-BUILT PROCESS FLOW DIAGRAM

ALAMEDA, CA

SCALE NONE | SHEET NO 1 | SHEETS

DWG NO ALA05-PFD | REV D

VOLTAGE SAFETY SURVEY RESULTS AND LOCATION MAP

Voltage Survey

Maximum allowable observed voltage is 15-volts.

Date/time: 10/7/2006 7:15 Inspector's Name: G Knight

PCU output Voltage: 585 VAC

Location Number	Voltage Detection Points		Voltage Readings (Volts)	Fixed or Random Location (F/R)
	Black Probe	Red Probe		
1	Gate Post	Gate Handle	0	F
2	Concrete	Fence Post	0	F
3	Concrete	Fence Post	0	F
4	Concrete	Bldg. 163 fence Post	0	F
5	Concrete	Bldg. 163 Steel Door Frame	0	F
6	Fence Post	Gate Handle	0	F
7	Concrete	Fence Post (by switch gear box)	0	F
8	Concrete	Fence Post (by switch gear box)	0	F
9	Concrete	Fence Post/Gate	0	F
10	Concrete	SDXR-2	0	F
11	Concrete	SDXR-1	0	F
12	Concrete	Pad Lock/Access Grate	1.09	F
13	Concrete	Water Valve Bollard	0	F
14	Concrete	Water Valve	0	F
15	Concrete	H4 Concrete Seal	4.6	F
16	Concrete	K7 Concrete Seal	4.4	F
17	Concrete	L7 Concrete Seal	2.8	F
18	Concrete	Water Valve Bollard	0	F
19	Concrete	Annex Door Frame	0	F
20	Concrete	Building 360 Door Frame	0	F
21	Concrete	Annex Center Column	0	F
22	Concrete	Annex Door Frame	0	F
23	Concrete	Plate Shop Door Frame	0	F
24	Concrete	Plate Shop Door Frame	0	F
25	Concrete	SDXR-4	0.9	R
26	Concrete	Annex Access Grate	1.8	R
27	Concrete	Locker (south annex wall)	4.8	R
28				
29				
30				
31				
32				

Voltage Survey

Maximum allowable observed voltage is 15-volts.

Date/time: 10/18/2006 16:00 Inspector's Name: B.Pierce

PCU output Voltage: 585 VAC

Location Number	Voltage Detection Points		Voltage Readings (Volts)	Fixed or Random Location (F/R)
	Black Probe	Red Probe		
1	Gate Post	Gate Handle	0	F
2	Concrete	Fence Post	0	F
3	Concrete	Fence Post	0	F
4	Concrete	Bldg. 163 fence Post	0	F
5	Concrete	Bldg. 163 Steel Door Frame	0	F
6	Fence Post	Gate Handle	0	F
7	Concrete	Fence Post (by switch gear box)	0	F
8	Concrete	Fence Post (by switch gear box)	0	F
9	Concrete	Fence Post/Gate	0	F
10	Concrete	SDXR-2	0.76 V	F
11	Concrete	SDXR-1	0.67 V	F
12	Concrete	Pad Lock/Access Grate	0	F
13	Concrete	Water Valve Bollard	0.92 V	F
14	Concrete	Water Valve	0	F
15	Concrete	H4 Concrete Seal	0.62 V	F
16	Concrete	K7 Concrete Seal	0	F
17	Concrete	L7 Concrete Seal	0	F
18	Concrete	Water Valve Bollard	0	F
19	Concrete	Annex Door Frame	0	F
20	Concrete	Building 360 Door Frame	0	F
21	Concrete	Annex Center Column	0	F
22	Concrete	Annex Door Frame	0	F
23	Concrete	Plate Shop Door Frame	0	F
24	Concrete	Plate Shop Door Frame	0	F
25	Concrete	SDXR-4	0	R
26	Concrete	Annex Access Grate	1 V	R
27	Concrete	Locker (south annex wall)	0	R
28	Gate Post	Gate Post	0	R
29	Concrete	Fence Post near D 4	0	R
30	Concrete	Metal Door near G 11	0.84V	R
31	Concrete	South Access Gate	0	R
32	Concrete	SDXR-3	0	R
33	Concrete	Hallway Access Door Frame	1.7 V	R
34	Concrete	Water Supply Manifold	0	R
35	Concrete	Stairs	0	R

VAPOR GAC VESSELS
EXCESS CONDEN. TANK
VR BLOWER
LIQUID GAC VESSELS
COOLING TOWER
CONDENSER
POWER CONTROL UNIT (PCU)
M04-05
TANK
4kV SWITCHGEAR
OVEN
360 ANNEX
BUILDING 363
BUILDING 360
MEZZANINE
OFFICE
VAT
VAT
VAT
REGION 1
5' TO 40' BGS
7440 SQ FT
REGION 2
5' TO 29' BGS
4320 SQ FT
REGION 3
5' TO 18' BGS
3150 SQ FT
REGION 4
5' TO 44' BGS
9290 SQ FT
REGION 5
5' TO 35' BGS
10,200 SQ FT
10,000 G/L TOTAL
34,400 SQ FT
STEP DOWN ZONE
M12 3'-10'
M12 26'-31'
M12 35'-46'
P15 6'-11'
P13 9'-14'
P13 26'-31'
P14 26'-31'
M13 25'-30'
F14 25'-30'
F14 32'-37'
H10 13'-15'
D17 20'-25'
D17 31'-36'
D17 30'-35'
D17 15'-20'
D17 26'-31'
D17 35'-40'

N

LEGEND

- ELECTRODE AND VAPOR RECOVERY WELL (92)
- GRID ID TEMPERATURE MONITORING POINT (14)
- GRID ID XX'-XX' (SCREEN INTERVAL) MONITORING WELL (16)

THERMAL REMEDIATION services inc.

CONFIDENTIAL

INFORMATION CONTAINED IN THIS DOCUMENT IS CONFIDENTIAL AND THE PROPERTY OF THERMAL REMEDIATION SERVICES, INC. NO INFORMATION CONTAINED HEREIN MAY BE DUPLICATED, USED OR DISTRIBUTED WITHOUT THE EXPRESSED WRITTEN PERMISSION OF THERMAL REMEDIATION SERVICES, INC. LONGVIEW, WA.

REFERENCE DRAWINGS		REVISIONS									
REVISION REFERENCE NO	DRAWING TITLE	RR	MF	QA BY / DATE	ENGR BY / DATE	CHK BY / DATE	REV BY / DATE	DESCRIPTION	REV
DCR-ALA05-067	ALA05-PP-01				DKS 10/13/06		TMP 10/13/06	MOVED ELECTODE, MW, AND TMP'S TO AS BUILT LOCATIONS	C
DCR-ALA05-06	ALA05-PP-01				DKS 8/28/06		DKS 8/28/06	ELIMINATE CO-LOCATED TMP AND MW.	B
DCR-ALA05-05	ALA05-PP-01				DKS 8/23/06		DKS 8/23/06	MONITORING WELL AND TMP LOCATION REVISIONS	A

DATE: 10-13-06

CADFILE: ALA05 ASB PP ccd

DRAWN	DK SEILER 5-2-06
CHECKED	
QA/QC APVD	
ENGR	DK SEILER 5-2-06
PROJECT MANAGER	G KNIGHT
OTHER	
QA	
APPROVED FOR IMPLEMENTATION BY / FOR / DATE	

ALA05

AS-BUILT PLOT PLAN

ALAMEDA, CA

SCALE 1"=30' | SHEET NO 1 | SHEETS 1

DWG NO ALA05-ASB-PP-01 | REV D

Appendix E
Waste Manifests

15858

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Doc. No.	2. Page 1 of 1
CA.2.1.7.0.0.2.3.2.3.6	1.2.2.1.1	

GENERATOR

3. Generator's Name and Mailing Address: Navy RWQC Alameda Point, 2450 Saratoga Street, Suite 200, Alameda, CA 94501

4. Generator's Phone: (510) 749-5942

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
Philip Services Industrial	C.A.R.0.0.0.0.8.4.1.4.5	800-800-7474

7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone

9. Designated Facility Name and Site Address	10. US EPA ID Number	C. Facility's Phone
Altamont Landfill, 10840 Altamont Pass Road, Livermore, CA 94510		925-455-7300

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Non Hazardous Waste, Solid	000	DM	00070	Y
b.				
c.				
d.				

Additional Descriptions for Materials Listed Above: P.O.# 55387300, Soils, 360 Bins

E. Handling Codes for Wastes Listed Above:

15. Special Handling Instructions and Additional Information: USE Appropriate PPE; Job #0605 WR4; PO# 26-111; 24 hour Emergency # 510-567-7455

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Gregory J. Grace	Gregory J Grace	12	22	06

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Mike Johnston		12	22	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

Printed by: J. HELLER & ASSOCIATES, INC., Walnut Creek, California

GENERATOR'S COPY

12-BLS-06-REV-12/98

15834

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1
	20526	

3. Generator's Name and Mailing Address: Navy Public Works Alameda Point, 2450 Saratoga St Suite 200, Alameda, CA 94501

4. Generator's Phone (510) 749-5902

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
Philip West Industrial Services	C A R 0 0 0 0 8 4 1 4 5	1-800-800-7472
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone
9. Designated Facility Name and Site Address	10. US EPA ID Number	C. Facility's Phone
ALTAMONT LANDFILL, 10840 ALTAMONT PASS RD, LIVERMORE, CA. 94550		(925) 455-7300

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. NON HAZARDOUS WASTE, SOLID	001	CM	1.5	T
b.				
c.				
d.				

Additional Descriptions for Materials Listed Above: Profile # 5578730 CTO133 Bins 360 Bins; Bin # R18037ML

E. Handling Codes for Wastes Listed Above:

15. Special Handling Instructions and Additional Information: Use Appropriate PPE; Job #; 24 HR EMERGENCY # 1-800-567-7455; PO # 26-11..1107

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Bob Pericone		1	0	7

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Raymond J. Bell		1	12	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

GENERATOR'S COPY

15835

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No. 141319	2. Page 1 of 1	
3. Generator's Name and Mailing Address: Navy BRAC Alameda Point, ~~BUILDING 360 4th STREET~~ 3450 Saratoga Street Suite 700, ALAMEDA, CA. 94501			
4. Generator's Phone (510) 749-5942			
5. Transporter 1 Company Name: Philip West Industrial Services	6. US EPA ID Number: CAR000054145	A. Transporter's Phone: 1-800-800-7472	
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone	
9. Designated Facility Name and Site Address: ALTAMONT LANDFILL, 10840 ALTAMONT PASS RD., LIVERMORE, CA. 94550	10. US EPA ID Number	C. Facility's Phone: (925) 456-7300	

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. NON HAZARDOUS WASTE, SOLID	001	CM	00015	Y
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above: BIN # R18516ML

Profile # 6538700

CTO 133

Bldg 360 Bins

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

Use Appropriate PPE

Job #

24 HR EMERGENCY # 1-800-537-7455

PO # 26-111, 01.02

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Rob Terricone	[signature]	11	02	06

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Steve Pearce	[signature]	11	02	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

GENERATOR · TRANSPORTER · FACILITY

GENERATOR'S COPY

15836

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . Manifest Document No. EU520

2. Page 1 of 1

3. Generator's Name and Mailing Address Navy Public Works Center
EFD West
2450 Saratoga Street
Alameda, CA 94501
Suite 200

4. Generator's Phone (510) 749-5940

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
Philip West Industrial Services	C A R 0 0 0 0 8 4 1 4 5	1-800-800-7478
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone
	. . . . .	

9. Designated Facility Name and Site Address	10. US EPA ID Number	C. Facility's Phone
ALTAMONT LANDFILL 10840 ALTAMONT PASS RD. LIVERMORE, CA. 94550	. . . . .	(925) 455-7160

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. NON HAZARDOUS WASTE, SOLID	001	M	1	Y
b.				
c.				
d.				

Additional Descriptions for Materials Listed Above
Profile # 5538730
CT0133
Bin # F1808J-ML
Bin 360 Bins

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Use Appropriate PPE
Job #
24 HR EMERGENCY # 1-800-567-7455
PO # 76-111.01.02

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Bob Ferrante		11	17	96

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
		11	25	96

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
		.	.	.

19. Discrepancy Indication Space

Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
		.	.	.

GENERATOR

TRANSPORTER

FACILITY

GENERATOR'S COPY

15837

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1
	10323	

3. Generator's Name and Mailing Address: Navy Force Alameda Point, 2450 Saratoga Street, Suite 200, ~~Building~~ ALAMEDA, CA. 94501

4. Generator's Phone (510) 749-5412

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
Philip West Industrial Services	CAR000008414 6	1-800-800-7472
7. Transporter 2 Company Name	**8. US EPA ID Number**	**B. Transporter's Phone**
9. Designated Facility Name and Site Address	**10. US EPA ID Number**	**C. Facility's Phone**
ALTAMONT LANDFILL, 10840 ALTAMONT PASS RD, LIVERMORE, CA.		925-455-1300

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. NON HAZARDOUS WASTE, SOLID	001	CM	15	Y
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above

Profile # GS538-7300
CTO 133
Bldg 360 bins
BIN # R1837 ML

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

Use Appropriate PPE

Job #

24 HR EMERGENCY # 1-800-567-7455

PO # 26-111.01.02

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Bob Perrissida	[signature]	12	02	06

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
RAYMOND J. BELL	Raymond J. Bell	10	02	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

GENERATOR | TRANSPORTER

GENERATOR'S COPY

15838

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. 10322 | 2. Page 1 of 1

3. Generator's Name and Mailing Address: Navy ROICC Alameda Point, 2450 Saratoga Street, Suite 200, ~~FEBC, DUBLIN, 360 HEGENBERGER~~ ALAMEDA, CA 94501

4. Generator's Phone: (510) 749-5912

5. Transporter 1 Company Name: Philip West Industrial Services | 6. US EPA ID Number: CAR000084145 | A. Transporter's Phone: 1-800-800-7472

7. Transporter 2 Company Name | 8. US EPA ID Number | B. Transporter's Phone

9. Designated Facility Name and Site Address: ALTAMONT LANDFILL, 10840 ALTAMONT PASS RD, LIVERMORE, CA 94550 | 10. US EPA ID Number | C. Facility's Phone: 925-455-7300

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. NON HAZARDOUS WASTE, SOLID	001	CM	00015	V
b.				
c.				
d.				

Additional Descriptions for Materials Listed Above: Profile # 55386700, CT0133, Bldg 360 Bins, BIN# 20-131-93

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information: Use Appropriate PPE; Job #

24 HR EMERGENCY # 1-800-567-7455; PO # 26-111.01.02

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Bob Perrine		10	03	06

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
[illegible]		10	03	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

GENERATOR'S COPY

15839

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. 10523 | 2. Page 1 of 1

3. Generator's Name and Mailing Address: Navy BRAC Alameda Point, 2450 Saratoga Street Suite 200
~~FORD BUILDING 360 CHILDS STREET~~ ALAMEDA CA. 94501
4. Generator's Phone (510) 749-5942

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
Phillip West Industrial Services	CAR000084145	1-800-800-7472
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone
9. Designated Facility Name and Site Address	10. US EPA ID Number	C. Facility's Phone
~~ALTAMONT LANDFILL~~ ICWMO ALTAMONT PASS RD LIVERMORE, CA. 94551		925-455-7300

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. NON HAZARDOUS WASTE, SOLID	001	CM	10.0.15	Y
b.				
c.				
d.				

Additional Descriptions for Materials Listed Above: BIN # 20-131-73
Profile # 55387300
CT0133
SiO2 360 Bins

E. Handling Codes for Wastes Listed Above:

15. Special Handling Instructions and Additional Information
Use Appropriate PPE
Job #
24 HR EMERGENCY # 1-800-567-7455
PO # 26-111-01.02

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Bob Petricone		10	03	06

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
RAYMOND J. BELL	Raymond J. Bell	10	03	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

GENERATOR'S COPY

15840

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. . . . . Manifest Document No. 10524 2. Page 1 of 1

3. Generator's Name and Mailing Address Navy Rule Alameda Point
~~EFEC~~
~~BUILDING 360 MAIL ST~~
2450 Saratoga Street Suite 205
ALAMEDA, CA 94501
4. Generator's Phone (510) 749-5812

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
Philip West Industrial Services	CAR000068414.5	1-800-800-7472
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone
	. . . . .	
9. Designated Facility Name and Site Address ALTAMONT LANDFILL 10840 ALTAMONT PASS RD LIVERMORE, CA. 94550	10. US EPA ID Number	C. Facility's Phone

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. NON HAZARDOUS WASTE, SOLID	0001	M	0.0.0.1.5	Y
b.				
c.				
d.				

Additional Descriptions for Materials Listed Above
Profile # 55338-7200
CT0133
Bldg 360 Bins
BIN # R18216ML

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Use Appropriate PPE
Job #
24 HR EMERGENCY # 1-800-567-7455
PO # 26-111.01.02

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Bob Ferriera		10	04	06

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Raymond T. Bell		10	04	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
		.	.	.

19. Discrepancy Indication Space

Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
		.	.	.

GENERATOR'S COPY

15841

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. 10525 | 2. Page 1 of 1

3. Generator's Name and Mailing Address Navy ROICC Alameda (o.A.t 2450 Saratoga Street Suite 200 ALAMEDA CA. 94501
4. Generator's Phone (510) 749 5974

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
Philip West Industrial Services	C A R 0 0 0 0 8 4 1 4 5	1-800-800-7472
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone
9. Designated Facility Name and Site Address ALTAMONT LANDFILL 10840 ALTAMONT PASS RD. LIVERMORE CA. 94550	10. US EPA ID Number	C. Facility's Phone 925-455 7300

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. NON HAZARDOUS WASTE, SOLID	001	M	0015	Y
b.				
c.				
d.				

Additional Descriptions for Materials Listed Above: Profile # 5572T300 CTO 133 Bldg 360 B.15 — BIN # R18213 MC

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

Use Appropriate PPE — Job #

24 HR EMERGENCY # 1-800-567-7455 — PO # 26-111.01.02

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Bob Reynolds		10	04	06

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

GENERATOR'S COPY

15842

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.:
Manifest Document No.: 20526
2. Page 1 of 1

3. Generator's Name and Mailing Address: ~~FREEP BUILDING 360 HHH~~ ALAMEDA, CA 94501
Navy - ROICC Alameda Point
2450 Saratoga Street
Suite 200
4. Generator's Phone (510) 748-5942

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
Phillip West Industrial Services	C A R 0 0 0 0 8 4 1 4 5	1-800-800-7472
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone
9. Designated Facility Name and Site Address	10. US EPA ID Number	C. Facility's Phone
ALTAMONT LANDFILL AVR 10840 ALTAMONT PASSRA LIVERMORE, CA. 94550		925-455-7300

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. NON HAZARDOUS WASTE, SOLID	0.0.1	C M	0.0.0.1.5	V
b.				
c.				
d.				

Additional Descriptions for Materials Listed Above: Profile # ~~5538~~ 7300 CT0133 Bldg 360 Bins — BIN # 20-131-37

E. Handling Codes for Wastes Listed Above:

15. Special Handling Instructions and Additional Information: Use Appropriate PPE — Job #

24 HR EMERGENCY # 1-800-567-7455 — PO # 26-111.01.02

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Bob Patricia		10	04	06

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Raymond J. Bell	Raymond J. Bell	10	04	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

GENERATOR — TRANSPORTER — FACILITY

TRANSPORTER #2

15843

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1
	11321	

3. Generator's Name and Mailing Address: Navy - KOICC Alameda Point, 2450 Saratoga Street, Suite 200, ~~FHE Bldg 26, HPA St.~~ ALAMEDA, CA. 94501

4. Generator's Phone: (510) 749-5742

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
Phillip West Industrial Services	C A R 0 0 0 0 8 4 1 4 5	1-800-800-7472
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone
9. Designated Facility Name and Site Address	10. US EPA ID Number	C. Facility's Phone
ALTAMONT LANDFILL 10840 ALTAMONT PASS RD. LIVERMORE, CA. 94551		925 455-7300

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. NON HAZARDOUS WASTE, SOLID	001	CM	00015	Y
b.				
c.				
d.				

Additional Descriptions for Materials Listed Above: Profile # 925 455 7300 CT0133 PIC 360 Bins — BIN # R18218ML

E. Handling Codes for Wastes Listed Above:

15. Special Handling Instructions and Additional Information: Use Appropriate PPE — Job # 26-111.01.02

24 HR EMERGENCY # 1-800-567-7455 — PO # 26-111.01.02

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Bob Perricone	R L [signature]	10	05	06

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
RAYMOND J. BELL	Raymond J. Bell	10	05	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

GENERATOR'S COPY

IT 944

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. LU320 | 2. Page 1 of 1

3. Generator's Name and Mailing Address: Navy ROICC Alameda Point, 2450 Saratoga Street, Suite 200, ~~ERD, Bldg 360 Hull St,~~ ALAMEDA, CA. 94501
4. Generator's Phone (510) 746-7472

5. Transporter 1 Company Name: Philip West Industrial Services | 6. US EPA ID Number: C A R 0 0 0 0 8 4 1 4 5 | A. Transporter's Phone: 1-800-800-7472

7. Transporter 2 Company Name | 8. US EPA ID Number | B. Transporter's Phone

9. Designated Facility Name and Site Address: ALTAMONT LANDFILL, 10840 ALTAMONT PASS RD. LIVERMORE, CA. 94550 | 10. US EPA ID Number | C. Facility's Phone: 925-455-7300

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. NON HAZARDOUS WASTE, SOLID	001	CM	00015	Y
b.				
c.				
d.				

Additional Descriptions for Materials Listed Above: BIN # 20-131-48
Profile # 55387200
CT0133
~~EQ~~ 360 Lf

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Use Appropriate PPE
Job #
24 HR EMERGENCY # 1-800-367-7455
PO # 26-111.01.02

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Bob Pecore	Bob P	10	05	06

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Terry Bachtold	[signature]	10	05	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

GENERATOR | TRANSPORTER | FACILITY

GENERATOR'S COPY

15945

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. 10329 | 2. Page 1 of 1

3. Generator's Name and Mailing Address
~~FTEC~~ Navy RORC - Alameda Point
~~ATTN: BLDG 360 1ST ST.~~ 2450 Saratoga Street, Suite 200
~~ALAMEDA CA 94501~~
4. Generator's Phone (~~510) 749-5940~~

5. Transporter 1 Company Name: Phillip West Industrial Services
6. US EPA ID Number: C A R 0 0 0 0 8 4 1 4 5
A. Transporter's Phone: 1-800-800-7472

7. Transporter 2 Company Name
8. US EPA ID Number
B. Transporter's Phone

9. Designated Facility Name and Site Address
ALTAMONT LANDFILL
10840 ALTAMONT PASS RD
LIVERMORE, CA. 94550
10. US EPA ID Number
C. Facility's Phone: 925-455-7300

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. NON HAZARDOUS WASTE, SOLID	001	CM	00015	Y
b.				
c.				
d.				

Additional Descriptions for Materials Listed Above
Profile # 553813C
CTO 133
Bldg 360 Demo
BIN # 18292 ML

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Use Appropriate PPE
Job #
24 HR EMERGENCY # 1-800-567-7455
PO # 26-111.01.02

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Bob Perrizo	B L	11	05	16

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
RAYMOND J. BELL	Raymond L. Bell	11	05	16

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

GENERATOR — TRANSPORTER — FACILITY

GENERATOR'S COPY

ease print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number CA2170023236	2. Page 1 of 1	3. Emergency Response Phone 800-424-9300	4. Manifest Tracking Number 000102965GBF

5. Generator's Name and Mailing Address
ROICC - Alameda Point
[illegible]0 Saratoga St. Suite 200
[illegible]meda, CA 94501
Generator's Phone: 510-749-5940

Generator's Site Address (if different than mailing address)
Bldg 360
2450 Saratoga St. Suite 200
Alameda, CA 94501

6. Transporter 1 Company Name
Denbeste Transportation

U.S. EPA ID Number
~~CAD982513632~~ CAD982513632 MV

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address
Chemical Waste Management
35251 Old Skyline Road
Kettleman City, CA 93239
Facility's Phone: 559-386-9711

U.S. EPA ID Number
CAT000646117

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
RQ	1. Hazardous Waste liquid, n.o.s. (cadmium, chromium), 9, NA3077, PGIII (D006, D007)	001	TT	2500	G	D006	D007	F008
						722	723	
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information
[illegible]on: Wear Appropriate protective equipment when handling. All Volumes are Estimated.
[illegible]ofile # EC-9768, ERG # 171. CTO-133, Site 4-2

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Gregory J. Grace
Signature: Gregory J. Grace
Month: 10 Day: 11 Year: 06

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: GARY BILLINGSLEY
Signature: Gary Billingsley
Month: 10 Day: 11 Year: 06

Transporter 2 Printed/Typed Name
Signature
Month Day Year

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name
Signature
Month Day Year

Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number CA2170023236	2. Page 1 of 1	3. Emergency Response Phone 800-424-9300	4. Manifest Tracking Number 000102966 GBF

GENERATOR

5. Generator's Name and Mailing Address
Former Alameda Point
2450 Saratoga St. Suite 200
Alameda, CA 94501
Generator's Phone: 510-749-5840

Generator's Site Address (if different than mailing address)
Bldg 360
2450 Saratoga St. Suite 200
Alameda, CA 94501

6. Transporter 1 Company Name: Denbeste Transportation — U.S. EPA ID Number: ~~CAD088513632~~ MW CAD982513632

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
Chemical Waste Management
35251 Old Skyline Road
Kettleman City, CA 93239
Facility's Phone: 559-386-9711
U.S. EPA ID Number: CAT000646117

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
RQ	1 Hazardous Waste liquid, n.o.s. (cadmium, chromium), 9, NA3077, PGIII (D006, D007)	001	TT	5000	G	D006 722	D007 723	F009
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information
Caution: Wear Appropriate protective equipment when handling. All Volumes are Estimated.
1: Profile # EC-9768. ERG # 171. CTO-133, Site 4-2

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Gregory J. Grace — Signature: Gregory J. Grace — Month: 10 Day: 10 Year: 06

INTL

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Gary Billingsley — Signature: [signature] — Month: 10 Day: 10 Year: 06

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Rec'd 4021 gal - resolved w/ Cindy Hunt @ Denbeste, 10/11/06
Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month — Day — Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H132			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Jamie Ward — Signature: Jamie Ward — Month: 11 Day: 01 Year: 06

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CA 2170023236
2. Page 1 of: 1
3. Emergency Response Phone: 925-250-4687
4. Manifest Tracking Number: 001551543 JJK

GENERATOR

5. Generator's Name and Mailing Address: ROICC - Alameda Point
2450 Saratoga St., Suite 200
Alameda, CA 94501
Generator's Phone: 510-749-5940
Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: Phillip West Industrial Services
U.S. EPA ID Number: CAR 000084145

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address: Chemical Waste Management
35251 Old Skyline Road
Kettleman City, CA 93239
Facility's Phone: 559-386-9711
U.S. EPA ID Number: CAT000646117

9a. HM	9b. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. RQ Hazardous Waste Solid, n.o.s. (F001, F002, F008), 9, NA3077 PGIII (F001)	1	CM	20	Y	611 F001	F002	F008
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information: Wear Appropriate PPE CWM Profile #: KT473977

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Gregory J. Grace
Signature: Gregory J. Grace
Month/Day/Year: 12/21/06

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Mike Johnston
Signature: Mike Johnston Sr
Month/Day/Year: 12/21/06

Transporter 2 Printed/Typed Name
Signature
Month/Day/Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month/Day/Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H132			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Steven Houhouser
Signature: Steven Houhouser
Month/Day/Year: 12/21/06

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
CA 2170023236	1	925-250-4687	001551544 JJK

GENERATOR

5. Generator's Name and Mailing Address: ROICC - Alameda Point, 2450 Saratoga Sts., Suite 200, Alameda, CA 94501
Generator's Site Address (if different than mailing address):
Generator's Phone: 510-749-5940

6. Transporter 1 Company Name: Philip West Industrial Services — U.S. EPA ID Number: CAR000084145

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Chemical Waste Management, 35251 Old Skyline Road, Kettleman City, CA 93239 — U.S. EPA ID Number:
Facility's Phone: 559-386-9711 — CAT000646117

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. RQ Hazardous waste Solid, n.o.s. (F001, F002, F008), 9, NA3077 PGIII (F001)	1	CM	20	Y	611 F001	F002	F008
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information
Wear Appropriate PPE CWM Profile #: KT473977

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Gregory J. Grace — Signature: Gregory J. Grace — Month: 12 Day: 21 Year: 06

INTL

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Jon Cushenberry — Signature: [signature] — Month: 12 Day: 21 Year: 06

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number:
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H132			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Steven Hanhousen — Signature: [signature] — Month: 12 Day: 21 Year: 06

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO GENERATOR

orm Approved OMB No. 2050-0039 (Expires 9-30-99)
lease print or type. *Form designed for use on elite (12-pitch) typewriter.*

See Instructions on back of page 6.

Department of Toxic Substances Control
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CA2170023236 — Manifest Document No. 038118
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
ROICC - Alameda Point
2450 Saratoga St.
Alameda, CA 94501
4. Generator's Phone ~~(925) 383-9789~~ (510) 749-5940

A. State Manifest Document Number: 2330603
B. State Generator's ID:
C. State Transporter's ID [Reserved]: 3184
D. Transporter's Phone: 800-423-5633
E. State Transporter's ID [Reserved]:
F. Transporter's Phone:
G. State Facility's ID:
H. Facility's Phone: 800-239-3943

5. Transporter 1 Company Name: Maumee Express
6. US EPA ID Number: NJD986073180
7. Transporter 2 Company Name:
8. US EPA ID Number:
9. Designated Facility Name and Site Address
US Ecology Nevada
11 Miles S. of Beatty on HWY 95
Beatty, NV 89003
10. US EPA ID Number: NVT330010000

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	15. Waste Number
a. HAzardous Waste Solid, N.O.S., 9, NA3077, PGIII (Activated Carbon)	01	3B	18800	P	State: EPA/Other: D009 D040
b.					State: EPA/Other:
c.					State: EPA/Other:
d.					State: EPA/Other:

J. Additional Descriptions for Materials Listed Above: EPA: 070801, 8972, 0031
K. Handling Codes for Wastes Listed Above: a. b. c. d.

15. Special Handling Instructions and Additional Information
24 Hour Emergency Contact: NormHanlet @ 925-383-9789
Alternate Contact: Alex Peru @ 360-901-8738

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
Gregory J. Grace	Gregory J. Grace	07	20	06

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Mike McNally		07	20	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

DO NOT WRITE BELOW THIS LINE.

SC 8022A (1/99)
A 8700—22

Yellow: GENERATOR RETAINS

Form Approved OMB No. 2050-0039 (Expires 9-30-99)
Please print or type. *Form designed for use on elite (12-pitch) typewriter.*

See Instructions on back of page 6.

Department of Toxic Substances Contro
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CA2171002323 — Manifest Document No. 03817 — 2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: ROICC - Alameda Point
2450 Saratoga St.
Alameda, CA 94501
4. Generator's Phone ~~(925) 383-9789~~ (510) 749-5940

A. State Manifest Document Number: 2330605
B. State Generator's ID:
C. State Transporter's ID [Reserved]: 3184
D. Transporter's Phone: 800-423-3653
E. State Transporter's ID [Reserved]:
F. Transporter's Phone:
G. State Facility's ID:
H. Facility's Phone: 800-239-3963

5. Transporter 1 Company Name: Maumee Express — 6. US EPA ID Number: NJD986601738
7. Transporter 2 Company Name — 8. US EPA ID Number:
9. Designated Facility Name and Site Address: US Ecology Nevada
11 Miles S. of Beatty on HWY 95
Beatty, NV 889063 — 10. US EPA ID Number: NVT330100000

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Numbers
a. Hazardous Waste Solid, N.O.S., 9, NA3077, PGIII (Activated Carbon)	013	BA	17300	P	State: 332 EPA/Other: D029, D040
b.					State: EPA/Other:
c.					State: EPA/Other:
d.					State: EPA/Other:

J. Additional Descriptions for Materials Listed Above: 11a. 07-013-8972, D029

K. Handling Codes for Wastes Listed Above: a. — b. — c. — d.

15. Special Handling Instructions and Additional Information
24 Hour Emergency Contact: Norm Hanlet @ 925-383-9789
Alternate Contact: Alex Peru @ 360-901-8738

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford..

GENERATOR

Printed/Typed Name	Signature	Month	Day	Year
Gregory J. Grace	Gregory J. Grace	07	18	16

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Mike McAnally		07	18	16

TRANSPORTER

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

DO NOT WRITE BELOW THIS LINE.

ISC 8022A (1/99)
'A 8700—22

Yellow: GENERATOR RETAINS

NON-HAZARDOUS WASTE MANIFEST # 158162

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. CA2170023236	Manifest Document No.	2. Page 1 of 1

3. Generator's Name and Mailing Address
RO|CC - Alameda Point
2450 Saratoga St. Suite 200 Alameda CA 94501
4. Generator's Phone (510) 749-5939 Attn: Shirley Ng

Non-Haz Man#

5. Transporter 1 Company Name	6. US EPA ID Number	A. State Transporter's ID
Landstar Global Logistics		B. Transporter 1 Phone
7. Transporter 2 Company Name	8. US EPA ID Number	C. State Transporter's ID
		D. Transporter 2 Phone

9. Designated Facility Name and Site Address	10. US EPA ID Number	E. State Facility's ID
CALGON Carbon Corp. 3200 E Eight Mile Rd Stockton, CA 95212-9414		F. Facility's Phone 1-866-225-4660

11. WASTE DESCRIPTION	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.
a. Non-hazardous waste solid (vapor phase carbon)	6	CM	12,000 lb	P
b.				
c.				
d.				

GENERATOR

G. Additional Descriptions for Materials Listed Above
11a. ____xVessel, Profile # 5078N
Vapor phase site 4-2

H. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Caution: Wear appropriate protective clothing and respiratory protection when handling.
All volumes are approximate
Site pick up address: Alameda Point Alameda CA

NON-HAZARDOUS WASTE

16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name	Signature	Date Month	Day	Year
Bob [illegible]	[signature]	2	22	07

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials				
Printed/Typed Name	Signature	Date Month	Day	Year
Ed Zuniga	Ed Zuniga	2	22	07
18. Transporter 2 Acknowledgement of Receipt of Materials				
Printed/Typed Name	Signature	Date Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name	Signature	Date Month	Day	Year

WORLD ENVIRONMENTAL & ENERGY, INC.

P.O. Box 256
West Sacramento, CA 95691
Tel: (916) 371-3617
Fax: (916) 371-3684

No. 18459

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

NAME ROICC - Alameda Point 15823

ADDRESS 2450 Saratoga Street EPA I.D. NO.

CITY, STATE, ZIP Alameda, CA 94501 PHONE NO. 510 749 5939

CONTAINERS: No. 45 Bldg VOLUME/CY 3 Y WEIGHT/TONS

TYPE: ☐ TANK TRUCK ☐ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER Rolloff/Flash Cube Van

WASTE DESCRIPTION Non Friable Asbestos Waste GENERATING PROCESS

COMPONENTS OF WASTE	PPM %	COMPONENTS OF WASTE	PPM %
1.		3.	
2.		4.	

VOC-OVA READINGS

SITE VERIFICATION Alameda Pt., Bldg. 360, Alameda, CA - JOB #5370

PROPERTIES: pH ____ ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER

HANDLING INSTRUCTIONS: USE PROPER RESPIRATORY EQUIPMENT

THE GENERATOR CERTIFIES THAT THE WASTE AS DESCRIBED IS 100% NON-HAZARDOUS.

TYPED OR PRINTED FULL NAME & SIGNATURE DATE 5/19/06

TRANSPORTER I

NAME STERLING ENVIRONMENTAL CORPORATION EPA I.D. NO. CAD982490119

ADDRESS 10203 E STREET SERVICE ORDER NO.

CITY, STATE, ZIP OAKLAND CA 94603, PICK UP DATE

PHONE NO. (510)638-2800

TYPED OR PRINTED FULL NAME & SIGNATURE DATE 5/19/06

TRUCK, UNIT, I.D. NO.

TRANSPORTER II

NAME WORLD ENVIRONMENTAL & ENERGY EPA I.D. NO. CAR000437283

ADDRESS 3208 WEST CAPITOL AVENUE SERVICE ORDER NO.

CITY, STATE, ZIP WEST SACRAMENTO, CA 95691 PICK UP DATE

PHONE NO. (916)371-3617

TYPED OR PRINTED FULL NAME & SIGNATURE DATE

TRUCK, UNIT, I.D. NO.

TSD FACILITY

NAME ALTAMONT LANDFILL EPA I.D. NO. CAD981382732

ADDRESS 10840 ALTAMONT PASS ROAD DISPOSAL METHOD

CITY, STATE, ZIP LIVERMORE, CA 94550 ☐ LANDFILL ☐ OTHER

PHONE NO. (925) 449-5349

TYPED OR PRINTED FULL NAME & SIGNATURE DATE

GEN	OLD/NEW	L	A	TONS
TRANS		S	B	
C/O		RT/CD		HWDF NONE

DISCREPANCY

Form Approved OMB No. 2050-0039 (Expires 9-30-99)
Please print or type. Form designed for use on elite (12-pitch) typewriter.

Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: CA2170023236 | Manifest Document No.: 03816 | 2. Page 1 of | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
BJB
ROICC-Alameda Point
2450 Saratoga Street, Alameda, CA 94501
4. Generator's Phone (510) 749-5939 ~~5940~~ 5940 Gregory Grace

A. State Manifest Document Number: 2480208
B. State Generator's ID: NOT REQUIRED
C. State Transporter's ID [Reserved.]
D. Transporter's Phone: 510 ERA-2000
E. State Transporter's ID [Reserved.]
F. Transporter's Phone: 916 371-3017
G. State Facility's ID
H. Facility's Phone: (707) 451-3276

5. Transporter 1 Company Name: STERLING ENVIRONMENTAL | 6. US EPA ID Number: CAD982500015
7. Transporter 2 Company Name: WORLD ENVIRON & ENERGY | 8. US EPA ID Number: CAR000037283
9. Designated Facility Name and Site Address: NWS HAY ROAD LANDFILL, 6426 HAY ROAD, VACAVILLE, CA 95687 | 10. US EPA ID Number: CAD982042475

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	L. Waste Number
a. R.Q. ASBESTOS, 9, NA 2212, PG III	042	BA	00004	Y	State 151 / EPA/Other
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above: FRIABLE ASBESTOS CONTAINING WASTE
K. Handling Codes for Wastes Listed Above: a. b. c. d.

15. Special Handling Instructions and Additional Information
24 HRS. EMERGENCY 1-800-~~535-5053~~ 428-5232
SITE: Alameda Point, Bldg. 360, Alameda, CA JOB #5370
EPA REGION IX (NAERG#171)
ASBESTOS REMOVAL REQUIREMENT 40CFR61(BAGGED, SEALED & LABELED)

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name	Signature	Month	Day	Year
Gregory J. Grace	Gregory J. Grace	05	05	06

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Jose Zambrano		05	05	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

DO NOT WRITE BELOW THIS LINE.

DTSC 8022A (1/99)
EPA 8700—22

Yellow: GENERATOR RETAINS

Please print or type. *Form designed for use on elite (12-pitch) typewriter.*

Department of Toxic Substances Control
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CA2170092326 — Manifest Document No. 03819 — 2. Page 1 of — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
ROICC SF BAY - ALAMEDA POINT
2450 SARATOGA ST., STE200 ALAMEDA CA 94501

4. Generator's Phone (510) 749-5940

A. State Manifest Document Number: 25175227

B. State Generator's ID:

5. Transporter 1 Company Name — 6. US EPA ID Number
WORLD ENVIRONMENTAL & ENERGY — CAR000087888

C. State Transporter's ID (Reserved):

D. Transporter's Phone: (916) 371-3617

7. Transporter 2 Company Name — 8. US EPA ID Number
CTQ 133

E. State Transporter's ID (Reserved):

F. Transporter's Phone:

9. Designated Facility Name and Site Address — 10. US EPA ID Number
CROSBY & OVERTON INC.
1630 W. 17th STREET
LONG BEACH CA 90813 — CAD982484890

G. State Facility's ID:

H. Facility's Phone: (562) 432-5445

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	J. Waste Number
a. NON RCRA HAZARDOUS WASTE SOLID (MASTIC SLOVENT)	0011	DM	001.25	Y	State: 352 EPA/Other:
b.					State: EPA/Other:
c.					State: EPA/Other:
d.					State: EPA/Other:

MASTIC REMOVAL SOLID MATERICAL PROFILE #39108
ADDITIONAL STATE CODE: 331

K. Handling Codes for Wastes Listed Above
a. b.
c. d.

15. Special Handling Instructions and Additional Information
WORLD ENVIRONMENTAL & ENERGY 24 HOURS EMERGENCY (800) 428-5232 EPA REGION IX

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
Gregory J. Grace	Gregory J. Grace	07	31	06

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
		07	31	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

DO NOT WRITE BELOW THIS LINE.

DTSC 8022A (1/99)
CA 8700—22

Blue: GENERATOR SENDS THIS COPY TO DTSC WITHIN 30 DAYS.
To: P.O. Box 400, Sacramento, CA 95812-0400

USFilter

WESTATES CARBON PRODUCTS

NON-HAZARDOUS MANIFEST

PKM10001

CONSIGNEE (TO):	SHIPPER (FROM):
☐ **Westates Carbon-Arizona** 2523 Mutahar Street Parker, AZ 85344	1 ROICC - Alameda Point
☒ **Westates Carbon-California** 11711 Reading Road Red Bluff, CA 96080	2 2450 Saratoga St. Suite 200 Alameda, CA 94501 Building 360 - TRS

Job#: 3 2692575

No. Shipping Units	TYPE *	DESCRIPTION	WEIGHT
4	5	**Spent Carbon – Non-Hazardous Waste**	6
5			1.7250
		Circle one: AQUA VAPOR	
25	DM	**Profile #:** W70057NH Exp 2-6-09	8.7250
7			1.750
7	DM	Profile # W710100 NH Exp. 2-21-09	1.750

CUSTOMER INFORMATION:

DATE: 8	PRINT NAME: 9	SIGNATURE: 10
7/31/07	[illegible]	[signature]

TRANSPORTER:

NAME OF CARRIER #1: Arthur Edwards WESTATES CARBON	DATE: 11 7-31-07	SIGNATURE: 12 [signature]
NAME OF CARRIER #2: 13	DATE: 14	SIGNATURE: 15
RECEIVED BY (FULL NAME): 16	DATE: 17	SIGNATURE: 18

1.) Name of Generator
2.) Generator site address
3.) Given job number
4.) Number of units being picked up
5.) Type of unit being picked up
6.) Total weight
7.) Profile number, MANDATORY
8.) Date service and/or pick up performed
9.) Name of person signing for Generator
10.) Signature of person in box 9
11.) Same as box 8
12.) Signature of driver for Transporter #1
13.) Name of carrier transporting to Plant
14.) Date the load was picked up to go to the Plant
15.) Driver's signature for Transporter #2
16.) Full name of Receiving person
17.) Date received into Plant
18.) Signature of Receiving person

NON-HAZARDOUS MANIFEST

WHITE: THE PLANT YELLOW: TRANSPORTER #2 PINK: FILE GOLD: GENERATOR

USFilter

WESTATES CARBON PRODUCTS

NON-HAZARDOUS MANIFEST

PKM10001

CONSIGNEE (TO):	SHIPPER (FROM):
☒ Westates Carbon-Arizona 2523 Mutahar Street Parker, AZ 85344	1 ROICC - Alameda Point
	2 2450 Saratoga St Suite 200
☐ Westates Carbon-California 11711 Reading Road Red Bluff, CA 96080	Alameda, CA 94501
	Bldg 360 - TRS

Job#: 3 2626751

No. Shipping Units	TYPE *	DESCRIPTION	WEIGHT
4 3	5 DM	**Spent Carbon – Non-Hazardous Waste**	6 1000
		Circle one: AQUA VAPOR	
		Profile # 7 W70057NH	

CUSTOMER INFORMATION:

DATE:	PRINT NAME:	SIGNATURE:
8 6-14-07	9 Gregory J. Grace	10 Gregory J. Grace

TRANSPORTER:

NAME OF CARRIER #1: Amilcar Euson WESTATES CARBON	DATE: 11 6-14-07	SIGNATURE: 12
NAME OF CARRIER #2: 13	DATE: 14	SIGNATURE: 15
RECEIVED BY (FULL NAME): 16	DATE: 17	SIGNATURE: 18

1.) Name of Generator
2.) Generator site address
3.) Given job number
4.) Number of units being picked up
5.) Type of unit being picked up
6.) Total weight
7.) Profile number, MANDATORY
8.) Date service and/or pick up performed
9.) Name of person signing for Generator
10.) Signature of person in box 9
11.) Same as box 8
12.) Signature of driver for Transporter #1
13.) Name of carrier transporting to Plant
14.) Date the load was picked up to go to the Plant
15.) Driver's signature for Transporter #2
16.) Full name of Receiving person
17.) Date received into Plant
18.) Signature of Receiving person

NON-HAZARDOUS MANIFEST

WHITE: THE PLANT YELLOW: TRANSPORTER #2 PINK: FILE GOLD: GENERATOR

USFilter WESTATES CARBON PRODUCTS

NON-HAZARDOUS MANIFEST # 15861 PKM10001

CONSIGNEE (TO):	SHIPPER (FROM):
☑ Westates Carbon-Arizona 2523 Mutahar Street Parker, AZ 85344	1 C/O Shaw
☐ Westates Carbon-California 11711 Reading Road Red Bluff, CA 96080	2 Thermal Remediation Services 399 West Seaplane Lagoon Alameda Ca 94501

Job#: 3 239895

No. Shipping Units	TYPE	DESCRIPTION	WEIGHT
4 21	5 Drums	Spent Carbon – Non-Hazardous Waste	6 8400
		Circle one: AQUA (VAPOR)	
		Profile # 7 W70100 NH	
		EXP 2-21-09	8400LBS

CUSTOMER INFORMATION:

DATE:	PRINT NAME:	SIGNATURE:
8 2/22/07	9 Bob Terrasano	10

TRANSPORTER:

NAME OF CARRIER #1:	DATE:	SIGNATURE:
WESTATES CARBON	11 2-22-07	12
NAME OF CARRIER #2: 13	DATE: 14	SIGNATURE: 15
RECEIVED BY (FULL NAME): 16	DATE: 17	SIGNATURE: 18

1.) Name of Generator
2.) Generator site address
3.) Given job number
4.) Number of units being picked up
5.) Type of unit being picked up
6.) Total weight
7.) Profile number, MANDATORY
8.) Date service and/or pick up performed
9.) Name of person signing for Generator
10.) Signature of person in box 9
11.) Same as box 8
12.) Signature of driver for Transporter #1
13.) Name of carrier transporting to Plant
14.) Date the load was picked up to go to the Plant
15.) Driver's signature for Transporter #2
16.) Full name of Receiving person
17.) Date received into Plant
18.) Signature of Receiving person

NON-HAZARDOUS MANIFEST

WHITE: THE PLANT YELLOW: TRANSPORTER #2 PINK: FILE GOLD: GENERATOR

USFilter

WESTATES CARBON PRODUCTS

NON-HAZARDOUS MANIFEST

15859

PKM10001

CONSIGNEE (TO):	SHIPPER (FROM):
☑ Westates Carbon-Arizona 2523 Mutahar Street Parker, AZ 85344	1 RDICC Alameda Point Bldg. 360 2 399 N. Seaplane Lagoon Alameda, Ca. 94501
☐ Westates Carbon-California 11711 Reading Road Red Bluff, CA 96080	

Job#: 3 None

No. Shipping Units	TYPE *	DESCRIPTION	WEIGHT
4 4	5 DM	**Spent Carbon – Non-Hazardous Waste**	6 1,200
		Circle one: AQUA VAPOR	
		Profile # 7 WN70057 NH EXP. 02/06/09	

CUSTOMER INFORMATION:

DATE:	PRINT NAME:	SIGNATURE:
8 2-9-07	9 Bob Perricone	10 Bob Perricone

TRANSPORTER:

NAME OF CARRIER #1: WESTATES CARBON	DATE: 11 02/09/07	SIGNATURE: 12
NAME OF CARRIER #2: 13	DATE: 14	SIGNATURE: 15
RECEIVED BY (FULL NAME): 16	DATE: 17	SIGNATURE: 18

1.) Name of Generator
2.) Generator site address
3.) Given job number
4.) Number of units being picked up
5.) Type of unit being picked up
6.) Total weight
7.) Profile number, MANDATORY
8.) Date service and/or pick up performed
9.) Name of person signing for Generator
10.) Signature of person in box 9
11.) Same as box 8
12.) Signature of driver for Transporter #1
13.) Name of carrier transporting to Plant
14.) Date the load was picked up to go to the Plant
15.) Driver's signature for Transporter #2
16.) Full name of Receiving person
17.) Date received into Plant
18.) Signature of Receiving person

NON-HAZARDOUS MANIFEST

WHITE: THE PLANT YELLOW: TRANSPORTER #2 PINK: FILE GOLD: GENERATOR

13069 15762

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

NAME ROICC SF BAY ALAMEDA POINT

ADDRESS 2450 SARATOGA ST., STE 200 EPA I.D. NO.

CITY, STATE, ZIP ALAMEDA, CA 94501 PHONE NO. ( )

CONTAINERS: No. 1 VOLUME/CY 3 yrds. WEIGHT/TONS X

TYPE: ☐ TANK TRUCK ☐ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER MOW HGZ

WASTE DESCRIPTION Poor Ti GENERATING PROCESS

COMPONENTS OF WASTE	PPM %	COMPONENTS OF WASTE	PPM %
1.		3.	
2.		4.	

VOC-OVA READINGS

SITE VERIFICATION

PROPERTIES: pH ☐ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER

HANDLING INSTRUCTIONS:

THE GENERATOR CERTIFIES THAT THE WASTE AS DESCRIBED IS 100% NON-HAZARDOUS

Bob Ferrazzi BF TYPED OR PRINTED FULL NAME & SIGNATURE DATE

TRANSPORTATION

NAME WORLD ENVIRONMENTAL & ENERGY EPA I.D. NO. CAR1000D31712 8

ADDRESS ~~PO BOX 192~~ SERVICE ORDER NO.

CITY, STATE, ZIP SACRAMENTO CA 95691 PICK UP DATE

PHONE NO. (916 371-3617 TYPED OR PRINTED FULL NAME & SIGNATURE 7/21/06 DATE

TRUCK, UNIT, I.D. NO.

TSD FACILITY

NAME NWS HAY ROAD LANDFILL EPA I.D. NO. CAD982042475

6426 HAY ROAD DISPOSAL METHOD

ADDRESS VACAVILLE CA 95687 ☐ LANDFILL ☐ OTHER

707 678-1492

CITY, STATE, ZIP

PHONE NO. (707 678-1492

TYPED OR PRINTED FULL NAME & SIGNATURE DATE

GEN	OLD/NEW	L	A	TONS	
TRANS		S	B		
C/O		RT/CD		HWDF	NONE

DISCREPANCY

White & Yellow - TSD COPY Pink - GENERATOR COPY Goldenrod - TRANSPORTER COPY

Appendix F
Laboratory Analytical Data Packages for Treatment Impact Assessment Soil and Groundwater Samples

N00236.003021
ALAMEDA POINT
SSIC NO. 5090.3.A.

APPENDIX F – LABORATORY ANALYTICAL DATA PACKAGES FOR TREATMENT IMPACT ASSESSMENT SOIL AND GROUNDWATER SAMPLES

THIS RECORD CONTAINS LARGE VOLUMES OF DATA AND IS NOT REQUIRED TO BE PHYSICALLY LOCATED WITH THE ADMINISTRATIVE RECORD DOCUMENT.

DUE TO EXTENSIVE VOLUME, THIS DATA WILL NOT BE IMAGED.

TO VIEW THE DATA, CONTACT:

DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
NAVAL FACILITIES ENGINEERING COMMAND SOUTHWEST
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132

TELEPHONE: (619) 532-3676

Appendix G
Laboratory analytical data packages for Groundwater Baseline, Progress, and Rebound Samples

N00236.003021
ALAMEDA POINT
SSIC NO. 5090.3.A.

APPENDIX G – LABORATORY ANALYTICAL DATA PACKAGES FOR GROUNDWATER BASELINE, PROGRESS, AND REBOUND SAMPLES

THIS RECORD CONTAINS LARGE VOLUMES OF DATA AND IS NOT REQUIRED TO BE PHYSICALLY LOCATED WITH THE ADMINISTRATIVE RECORD DOCUMENT.

DUE TO EXTENSIVE VOLUME, THIS DATA WILL NOT BE IMAGED.

TO VIEW THE DATA, CONTACT:

DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
NAVAL FACILITIES ENGINEERING COMMAND SOUTHWEST
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132

TELEPHONE: (619) 532-3676

Appendix H
Laboratory Analytical Data Packages for System Compliance Monitoring Samples

APPENDIX H – LABORATORY ANALYTICAL DATA PACKAGES FOR SYSTEM COMPLIANCE MONITORING SAMPLES

THIS RECORD CONTAINS LARGE VOLUMES OF DATA AND IS NOT REQUIRED TO BE PHYSICALLY LOCATED WITH THE ADMINISTRATIVE RECORD DOCUMENT.

DUE TO EXTENSIVE VOLUME, THIS DATA WILL NOT BE IMAGED.

TO VIEW THE DATA, CONTACT:

DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
NAVAL FACILITIES ENGINEERING COMMAND SOUTHWEST
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132

TELEPHONE: (619) 532-3676

Appendix I
Statistical Analyses of September Rebound Groundwater Sampling Data

Statistical Analysis of Alameda Plume 4-2

The objective of this statistical analysis is to estimate the mean concentration of total SAs in the Alameda Plume 4-2 during the September 2007 sampling event when all 19 wells were monitored, and to test whether the mean total SAs is less than 10,000 µg/L. The plume is monitored in 5 strata, or operational units, representing different proportions of the total water volume of the plume. Since each stratum represents a different volume of water in the plume a stratified statistical analysis design is appropriate. The use of stratification is a standard method of analysis to estimate the mean, variance of a characteristic and is discussed in sampling texts such as Cochran[1]. Because the mass of all physical samples is insignificant compared to the total mass of the population, the finite population correction factor is ignored. Also, as Region 3 had only one sampling well it was impossible to get a reliable mean or variance estimate for this stratum and Region 3 was thus collapsed with Region 2 to form a single collapsed stratum. Table 1 below shows the 4 strata used in the statistical analysis design along with the results for Total SAs for each well within the stratum during the September 2007 sampling period. Table 2 gives the stratum weights representing the proportion of water volume each stratum represents.

Table 1. Strata and Results

Strata	Well ID	Sample Collection Date	Units	Total SAs
Region 1	MW4-2-1	9/24/2007	µg/L	23.71
	MW4-2-2	9/24/2007	µg/L	297.70
	MW4-2-3	9/24/2007	µg/L	175.00
	MW4-2-4	9/24/2007	µg/L	633.50
	MW4-2-5	9/25/2007	µg/L	7598.90
Region 2&3	MW4-2-9	9/24/2007	µg/L	26.96
	MW4-2-18	9/25/2007	µg/L	476.30
	MW4-2-14	9/25/2007	µg/L	22.56
Region 4	MW4-2-6	9/24/2007	µg/L	8.50
	MW4-2-7	9/24/2007	µg/L	17.11
	MW4-2-8	9/24/2007	µg/L	280.63
	MW4-2-11	9/24/2007	µg/L	21.49
	MW4-2-12	9/24/2007	µg/L	1328.00
	MW4-2-13	9/24/2007	µg/L	1527.76
Region 5	MW4-2-10	9/24/2007	µg/L	1464.70
	MW4-2-15	9/25/2007	µg/L	497.75
	MW4-2-16	9/25/2007	µg/L	1203.56
	MW4-2-17	9/24/2007	µg/L	12044.85
	MW4-2-19	9/24/2007	µg/L	739.58

[1] W. Cochramn (1977) Sampling. John Wiley, NY,NY

Table 2. Water Volume and Weights by Strata

Strata	Total GW Vol by Region (L)	Stratum Weight	Number of Wells
Region 1	2,021,299.20	0.26	5
Region 2 & 3	637,259.40	0.08	3
Region 4	2,760,523.50	0.36	6
Region 5	2,251,548.00	0.29	5
Total	7,670,630.10	1.00	19

To determine if the plume mean for Total SAs is less than the 10,000 µg/L an upper 95% upper confidence limit (UCL), based on the t-statistic, was used. As the data within each strata and across all strata appears highly skewed Chen's test was also applied. Chen's test is suggested for use by EPA [2] when data appears highly skewed and is more appropriate in these situations than the 95% UCL based on the t-distribution. Table 3 below gives the stratum weights, weighted summary statistics, and the 95% UCL and results of Chen's test for testing whether the mean for Total SAs is greater than 10,000 µg/L. Note the result for Chen's test is a p-value. The p-value is a probability and is thus a value between 0 and 1. If the p-value is less than 0.05, in our case, there is evidence to support the fact that the mean is greater than 10,000 µg/L. However, as the p-value is 1.0, this strongly suggests that the mean for the plume is less than 10,000 µg/L. The 95% UCL(t) based on the t-distribution gives a UCL of 3085.7µg/L which is also less than 10,000 µg/L.

Table 3: Plume and Strata Estimates, UCL and Chen's Test

Strata	Stratum Weight	Weighted Mean (µg/L)	Weighted Variance	Weighted Variance of Mean	Weighted Third Moment about Mean	Weighted Standard Error of Mean	Weighted Skew-ness	95% UCL(T) (µg/L)	Chen's Test Mean > 10,000 (p-value)
Region 1	0.26	460.0	7.47E+05	1.49E+05	1.43E+09				
Region 2&3	0.08	14.6	4.69E+02	1.56E+02	1.76E+04				
Region 4	0.36	190.9	6.44E+04	1.07E+04	1.50E+07				
Region 5	0.29	936.4	2.12E+06	4.25E+05	6.82E+09				
Plume Total	1.00	1601.9	2.94E+06	5.85E+05	8.26E+09	7.65E+02	1.64E+00	3085.7	1.00

For comparative purposes, the analysis was also carried out on the unweighted and unstratified raw data. This analysis is inappropriate as it would down weight information representing a larger proportion of the water volume. However, it is being included here as it is commonly used whether it is appropriate or not. ProUCL 4.0, (which can not handle stratified data) gave a 95% UCL based on the gamma distribution of 3431 µg/L for the mean of Total SAs and Chen's test also gave a p-value of 1.0. Again, two procedures indicate that the mean concentration of Total SAs in the plume is less than 10,000 µg/L.

[2] USEPA (2006), EPA QA/G-9:Data Quality Assessment A Reviewer's Guide, EPA/240/B-06/002
Chen, L (1995), Testing the mean of a skewed distribution, Journ. of The American Stata. Assoc., 90:767-772

ANALYTICAL DATA

THIS RECORD CONTAINS LARGE VOLUMES OF DATA AND IS NOT REQUIRED TO BE PHYSICALLY LOCATED WITH THE ADMINISTRATIVE RECORD DOCUMENT.

DUE TO EXTENSIVE VOLUME, THIS DATA WILL NOT BE IMAGED.

TO VIEW THE DATA, CONTACT:

DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
NAVAL FACILITIES ENGINEERING COMMAND SOUTHWEST
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132

TELEPHONE: (619) 532-3676